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THE OPILIONID FAUNA OF CHIAPAS, MEXICO, AND ADJACENT AREAS (ARACHNOIDEA, OPILIONES)

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CONTENTS

INTRODUCTION

During the course of extensive studies on the opilionids, or phalangids, we have become increasingly impressed with their possible value as indicators of zoogeographical and distributional patterns. The reasons for these conclusions are several. Among them is the fact that these animals are old geologically; thus their distribution has been molded by the many geological events of the different epochs. Also they are not able to fly, so must rely upon their own ability to crawl slowly about or upon chance events for any extension of their ranges.

Before there can be any validity to the conclusions concerning the distribution of these animals as influenced by historical geology and modern ecology, the classification of necessity must rest on surer concepts than have been previously provided. The problem thus is a twofold one: first, to study the possible adoption of new

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taxonomic methods, and, second, to clarify the distribution of these animals.

The area selected for this study was the state of Chiapas in southeastern Mexico. This state is extremely mountainous and presents conditions that vary from high mountains of pine and oak forests to lowlands covered with tropical rain forest. All variations of humidity are encountered, from the saturated rain forests to the dry scrub areas. Again, various geological ages are well represented. The mountains of the Mesa Central date from the Cretaceous, while those of the Pacific range were born in the volcanic upheavals of the Pleistocene and Recent epochs. These coastal mountains are still in the throes of geologic adjustment. Chiapas thus has both historical and ecological features to recommend it.

For the taxonomic portion of the study, large series of animals were collected in many different localities, and their variations were studied. By this means it has been possible to alter radically our generic concepts and thereby to demonstrate phylogenetic relationships. By studying the variability of these species and by using the breeding population as a unit, we feel that the taxonomy of these interesting arachnids is brought more into line with modern taxonomic concepts.

Acknowledgments

A study of this kind would be impossible without the assistance and advice of a large number of individuals. Inasmuch as the state of Chiapas is relatively undeveloped, travel through many of the areas is dependent upon the hospitality and friendliness of the inhabitants. It is quite impossible to acknowledge the scores of considerate people who have aided us in so many ways. Worthy of particular thanks are the following: the Bulnes family of the Finca El Real, Sr. Palomeque of Tapachula, and Sr. José Trinidad Patino Navarrete who was temporarily in charge of the Finca Guatimoc. These people gave us the hospitality of the *fincas* for considerable periods of time.

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mer of 1949. During the month of July, 1950, Dr. Lewis J. Stannard was a welcome field companion. Mention must also be made of the constant aid and helpful criticism of Dr. W. J. Gertsch of the American Museum of Natural History.

During the summer of 1950, the largest number of localities was visited under the sponsorship of a grant from the Penrose Fund of the American Philosophical Society. The stay at Palenque was sponsored by a special grant from the Purdue Research Foundation. We wish to express our sincere appreciation to both of these organizations.

Historical Factors that may Influence Distribution of Opilionids in Chiapas

The state of Chiapas, with an area of 27,200 square miles, varies greatly in physiographic features. It varies in altitude from sea level to a high point of 13,090 feet on the volcanic peak of Tacaná. Schuchert (1935) recognizes five physiographic units. These are:

1. The Low Pacific Coastal Plain consisting of Pleistocene and Recent deposits on the south shore.

2. Just north of this, the Sierra Madre Mountain Province. This province has an altitude averaging about 3000 feet in eastern Oaxaca and 9750 feet at the Guatemalan border. The southern slope has ancient granite and gneiss plus young eruptives. The northern slope has materials dating from late Paleozoic times.

3. North of this range is the Central Depression with an altitude varying from 1625 feet to 2275 feet. Bounded by mountains on each side, it is a block-faulted area.

4. North of the Central Depression is the Mesa Central, or Cretaceous Plateau, of San Cristobal which averages about 7500 feet in altitude.

5. Lastly there is the area of high rainfall and rich vegetation, the Northern or Cenozoic Mountain Province. The highest part of this province is from 4900 to 5850 feet. It descends step-like into the coastal plains of Tabasco.

These provinces have come into existence chiefly through faulting. This is particularly noticeable in the Central Depression and the Mesa Central.

The historical geology of Chiapas according to Schuchert (1935) briefly is as follows:

An ancient geanticline, the protaxis of Central America, existed before Permian time. Towards the close of the Permian, the first fold-mountain making occurred. Until the early Cretaceous this nucleus continued when the seas spread over much of Mexico, leaving only the southern and southwestern portions dry. Fold-mountain making began again in the late Mesozoic and continued into early Eocene times. These movements thrust against the older southward formations of the nucleus, with the result that much of Oaxaca, Chiapas, and Guatemala became dry land. Late in the Eocene, the seas of the north again covered much of southern Mexico.

The greatest elevations occurred during the late Pliocene, raising western Chiapas about 3500 feet, eastern Chiapas about 7000 feet, the central portion about 1950 feet, and the northern 7800 feet. The extent of elevation of the Sierra Madre at this time is not known.

It appears from available information that the exact geologic age of all regions has as yet not been accurately determined. The indications are, however, that the low Pacific Coastland and the Gulf Lowlands were covered by the sea during periods of the Pleistocene and have emerged in relatively recent times (Quaternary). The Sierra Madre probably arose during the late Pliocene, with the volcanoes being of Pleistocene or Recent origin. Much of the Central Depression and Mesa Central can be considered Upper Cretaceous, while the northern or Cenozoic Mountain Province is in part Tertiary, with the Gulf Lowlands dating from the Quaternary.

During the course of this investigation, we were able to collect in all of the physiographic zones. Only one, the Central Depression, was too dry when visited to yield any animals. The localities visited in the different zones were as follows:

1. Low Pacific Coastal Plain. Finca Santa Martha near Huehuetán, Puerto Madero, and Tapachula.
2. Sierra Madre Mountain Province. Cacaohuatan, Unión Juarez, Finca Guatimoc.
3. Central Depression. Tuxtla Gutierrez, Chiapa de Corzo.
4. Mesa Central. San Cristobal Las Casas, Tenejapa, Cruz Quemada, Comitán.
5. Northern, or Cenozoic, Mountain Province. Ocosingo, Finca El Real, Finca Monte Libano, Palenque, Teapa, Pichucalco, and Villa Hermosa.

Numerous localities in the adjoining states of Campeche, Oaxaca, and Veracruz have also been visited. Much of the in-

formation so obtained has been used for the interpretation of the distribution and relationship of the various species

Ecological Factors that may Affect Distribution of Opilionids

Although the distribution of any animal group may be fundamentally due to geological and physiographical influences, ecological factors also play an important role. In Chiapas the interaction of these two influences is clearly illustrated. The principal groups that are present are due to historic factors, but their present-day distribution is determined by local ecological conditions. These local conditions may be as recent as last year's clearing of a forest.

In a country so highly dissected as Chiapas, many local variants develop. In general, however, it is possible to identify various definite zones within each of the physiographic areas as recognized by Schuchert.

1. The Low Pacific Coastal Plain is characterized by its low, uniform, tropical rain forest. This area is heavily populated and badly disturbed because of cultivation. In the immediate area of the coast are many mangrove swamps and sparse vegetation on the low sand dunes.

2. The Sierra Madre Mountain Province presents a large number of varying climatic zones depending upon altitude. The typical low coastal forest continues to about 2000 feet. As the rainfall gradually increases with the increasing altitude, the size and luxuriance of the rain forest become greater. At present, the zone from 2000 to 5000 feet is devoted to coffee raising; the natural vegetation was probably rich tropical rain forest. Above 5000 feet is the true cloud forest; in some areas this is also utilized for coffee raising. The tree ferns become abundant here, reaching their maximum number from 5000 to 7000 feet. Above 7000 feet, the forest is interspersed with bamboo and *mano de mico*. This extends to about 9500 feet. Above this area are the pine forests. All these zones are of course seen only on the highest peaks such as the Volcan Tacaná and Tajamulco in Guatemala.

In local areas these zones may have considerably different altitudinal distribution. For example, the pine forest of Tacaná extends down to an area just above the town of Unión Juarez.

This stand of pine may have been due to local conditions such as slope and wind.

3. The Central Depression. In general, this area is quite dry, with scrubby vegetation. The whole area has a broken topography, with many hills and ravines.

4. The Mesa Central, with an average altitude of 7500 feet, is covered with pine and oak forests. The vegetation of the area has elements closely related to species of the Appalachian Uplift and to the western mountains of this country. Some genera of plants to be found here are *Liquidambar*, *Quercus*, *Pinus*, *Lycopodium*, and *Mitchella*.

5. The Northern or Cenozoic Mountain Province varies in altitude from about 5850 feet to sea level and has a variable topography and vegetation. Most of the Ocosingo Valley is covered with an oak and pine forest which is burned annually. Beyond the Finca El Real, the tropical rain forest is encountered. This is the *selva lacandona* which ultimately merges into the Petén Forest of Guatemala. This rain forest is also seen around Palenque, Teapa, and Pichucalco. These low hills gradually fall away into the low swampy coastal plain of Tabasco.

Unfortunately large sections of Chiapas are very badly disturbed by agriculture and cattle raising. Only in a few areas such as those near the Ruins of Palenque, the *selva lacandona*, and in some sparsely inhabited mountain areas can the original vegetation be seen.

Such disturbance can have a very marked effect on even so small an animal as a phalangodid. We were impressed with this fact during our studies at the Finca El Real. Judging from the small remnants of tropical rain forest in the immediate vicinity of the finca, the phalangodid *Cynortina acanthotibialis* appeared to be the most common form. In the disturbed pasture areas, this form was replaced by *Pachylicus acutus*. It would appear that the cutting of the forest and the subsequent grazing by cattle made the area unsuitable for *C. acanthotibialis* and permitted *P. acutus* to move in and occupy an unexploited ecological niche. Further credence is given to this conclusion by the comparative abundance of this latter animal throughout many disturbed sections of Veracruz, Oaxaca, Chiapas, Tabasco, Campeche, and Yucatan. Further, in the undisturbed forests of Finca Monte Libano and the Ruins of Palenque (a short distance away) only *C. acanthotibialis* was encountered.

From numerous observations it appears clear to us that most species of opilionids are extremely vigorous, rapidly reproducing forms which move into any suitable area. They are potentially unlimited in their range except as barriers of climate or competing ecologically equivalent species interfere. Thus we find that the ranges of many of the species are very large, and many forms and even subspecies are recognizable. Very frequently a dry inhospitable region will not be the barrier it seems at first sight. Through such areas, streams often provide a band of forest that acts as a corridor for the spread of an animal. This principle has been developed by Carr (1950) in his herpetological studies in Honduras and seems equally applicable here. The tiny form *Stygnomma teapensis* could not survive in the oak-pine forests of the Ocosingo Valley; nevertheless, it was present in a small band of moist vegetation near a stream in the vicinity of the Finca San Antonio.

The forest of the Gulf Lowlands is continuous with the forests of Central America and of northern South America. This provides a continuous ecological zone and has undoubtedly facilitated the populating of this geologically recent area by southern species.

Present-day Opilionid Distribution

The evolution and origin of the opilionid fauna of Chiapas are not entirely clear from data based on present-day distribution. It is quite impossible adequately to generalize on faunal areas, inasmuch as each species has its own peculiar distribution which usually does not coincide with that of another species.

From the material, however, we can recognize at least three distinct faunal regions. These are: first, the northern gulf lowlands, corresponding to the Cenozoic Mountain Province, which extend into the first mountain ranges; second, the high central mountains (the Mesa Central) with their flora that shows such remarkable affinities to that of the eastern United States; and, third, the Pacific slope and lowlands.

In each of these areas there is some degree of homogeneity of species, but there is much overlapping from one area to another. In fact, owing to the individuality of the distribution of each species, any given locality is somewhat different from a neighboring locality. For this reason, we believe it impossible to delineate fine geographical subdivisions that have any real significance

or basis. We agree with Deevey (1949) when he says: "The great majority of modern biogeographers seem to be engaged in further refinement of Wallace's realms, breaking them down into provinces and subprovinces, the boundaries of which inevitably differ according to the kind of organism considered. Except perhaps in discussing the land biota of islands, it is an essentially fruitless pursuit, since it is based on the generalization of facts that cannot be generalized."

The elements that make up the opilionid fauna of Chiapas must have had several origins. There are the ancient forms that have been left over from the various inundations of different ancient rises of the seas which left the Chiapas and Guatemalan highlands isolated. Like the plants, these remnants must have withstood the flooding by remaining on the area that is now the Mesa Central. This is evidenced, as among the plants, by species living at present in Chiapas that are closely allied to forms of the Appalachian highlands, the Ozarkian region, the gulf lowlands, and the western mountains of the United States. This element includes some of the phalangodid species, some cosmetids, and members of the genus *Leiobunum* and possibly of the genus *Caddo*. Another element that plays a large role in the present-day opilionid population is the recent immigrants from the south. These Neotropical species have been able to move in and, until stopped by various ecological barriers, vigorously spread over much of the area as soon as it became available. This element includes the genera *Stygnomma*, *Paecilaema*, and *Pachylicus*. The best evidence of these latter invasions is in the Gulf region and along the Pacific coast and slope. These areas were, of course, readily available after their emergence from the sea in comparatively recent times, and were rapidly occupied by this vigorous Neotropical element. In the older Mesa Central established forms must have provided effective ecological resistance, for only two species of this latter element are found (*Paecilaema rastellifera* and *Stygnomma plana*).

As these new forms moved into the Pacific slope and occupied habitats of optimum ecological conditions, zonation became established. The presence of related forms effectively kept others from invading. This was best seen on Volcan Tacaná among the following species: *Cynorta subserialis subserialis* in the lowlands, *C. s. tricristatus* from 1300 to 3000 feet, and *Paecilaema bilineatum* from 3300 to 5000 feet.

A few other species, notably members of the genus *Paramitra-*

ceras, appear to have arisen in the highlands of Chiapas and Guatemala and to be not very closely related to genera of the other regions. This endemic fauna mingles in the high mountains with some ancient elements and the recent Neotropical invaders.

Gazeteer of Collecting Localities

Gulf Lowlands

Palenque Ruins, Chiapas: Altitude 984 feet. The collections

Fig. 1. Map of the states of Chiapas and Tabasco, Mexico, showing collecting localities.

were made in the immediate vicinity of the ruins which are about 5 miles southwest of the town of the same name. The ruins are located in the foothills of the Sierra de Palenque and are surrounded by fine tropical rain forest. The trees here are much higher than in the true Gulf Lowlands which are only a few miles away.

PICHUCALO, CHIAPAS: Altitude 351 feet. At one time this area was tropical rain forest, as is evidenced by small patches of vegetation along the streams where most of the collections were made. At present most of the area is badly disturbed by cattle and agriculture.

TEAPA, TABASCO: Altitude 177 feet. Teapa is in a valley surrounded by low mountains. The tropical rain forest is present only in tiny isolated areas; the remaining land is devoted to agriculture and cattle. The Baños de Azufre are near Teapa.

VILLA HERMOSA, TABASCO: Altitude 36 feet. Collections around this town were made in the vicinity of the airport. Whatever original vegetation was here is at present completely absent.

THE OCOSINGO VALLEY

FINCA EL REAL: Altitude 2100 feet, approximately 27 miles east of Ocosingo. Formerly the area around this *finca* was tropical rain forest, and remnants are visible around the streams. At present, cattle graze over the entire area.

FINCA SAN ANTONIO: Altitude 3798 feet, about 12 miles east of Ocosingo. The vegetation at this locality is confined to oak and pine, with some poor tropical rain forest along some of the streams. All is badly disturbed by cattle and annual burning.

FINCA MONTE LIBANO: This *finca* is located about 12 miles east of El Real. This was the only area visited (other than Palenque) that had any of the original tropical rain forest remaining. The mahogany, however, had been removed.

FINCA TECOJA: Altitude 1771 feet, only a mile or two from the Finca El Real. The vegetation and general conditions were the same as at El Real.

OCOSINGO: Altitude 3017 feet. All the area around this town is badly disturbed by cattle and agriculture. Most of the collections were from a small cave near the Pyramid Tzajalalchib which is at an altitude of 3740 feet.

RUINS OF TONINÁ: Altitude 3017 feet, about 9 miles east of Ocosingo. Around the ruins, the vegetation is disturbed tropical rain forest.

CENTRAL MOUNTAINOUS AREA

COMITÁN: Altitude 5537 feet. There is little vegetation around this town which is located on a broad plain.

CRUZ QUEMADA: Altitude 6560 feet, a small settlement not far from Amatenango. The area surrounding this settlement is chiefly oak and pine. As the human population was quite sparse, the collecting was better than at Comitán.

RIO SAN GREGORIO: Altitude 2132 feet. To approach this area from Comitán, a high mountain pass is first crossed, and then there is a rapid descent to the river. The area is very badly disturbed by cattle, and it is difficult to determine the exact nature of the original vegetation.

SAN CRISTOBAL LAS CASAS: Altitude 6900 feet. Most of the collections from this locality were made in the mountains surrounding the valley in which the city is located. The mountains (at least 7500 feet high) are covered with pine, oak, and *madrona*, with occasional wet meadows throughout the area.

TENEJAPA: Altitude 6445 feet, about 12 miles north of Las Casas. The vegetation around this small Indian village is quite similar to that near Las Casas.

PACIFIC COAST

CACAHUATAN: Altitude 1640 feet, 10 miles northeast of Tapachula. This area is devoted primarily to the raising of bananas and coffee. It is badly disturbed, but animals could be found under leaves and logs.

FINCA GUATIMOC: Altitude 2853 feet, 5 miles northeast of Cacahuatan on the slope of the Volcan Tacaná. This *finca* is owned by the government and is devoted to the raising of coffee and quinine. The original rain forest is left only around a few streams; nevertheless it is an excellent collecting area because of the good cover of coffee and legumes. Tree ferns are numerous in the cloud forest just above the *finca*.

FINCA SANTA MARTHA: Altitude 20 feet, 6 miles south of Huehuetán near the coast. Once this area was poor low tropical forest of the coastal type. At present, bananas are cultivated.

PUERTO MADERO (PUERTO SAN BENITO): Altitude, sea level. This coastal area has much dune vegetation and numerous mangrove swamps.

UNIÓN JUAREZ: Altitude 4400 feet. This town, located on the slope of the Volcan Tacaná, has pine forests just above it.

SYSTEMATIC STUDY

ORDER OPILIONES

The Order Opiliones includes those members of the Phylum Arthropoda, Class Arachnoidea, that have the following characteristics: unsegmented cephalothorax broadly jointed to the faintly segmented abdomen, three-segmented chelate chelicerae, six-jointed palpus, palpus and anterior coxae with chewing plates, a pair of simple eyes usually on a tubercle, genital openings between the last coxae, a pair of scent glands at the anterior part of the cephalothorax, spiracles on the first abdominal segments, and respiration by tracheae.

The Order Opiliones was established by Sundevall in 1833. The order has since been divided into three suborders: Cyphophthalmi (Simon, 1879), Laniatores (Thorell, 1876), and Palpatores (Thorell, 1876).

The members of the Suborder Cyphophthalmi are small, mite-like animals that have their scent glands elevated on small projections. The members of the Suborder Laniatores have heavily spined palpi, and their third and fourth claws are either double or single. If single, the claw is divided into three parts. The members of the Suborder Palpatores have slender palpi and but a single claw on the tarsi of the third and fourth legs. Of the three suborders, only the latter two are known from Chiapas. The members of the Suborder Cyphophthalmi are sparsely distributed, but they may eventually be discovered in Central America. At present they are known from both the United States and northern South America. The members of the Laniatores are abundantly represented, with two families being found in Chiapas: the Cosmetidae, the members of which have flattened palpi, and the Phalangodidae, the members of which have cylindrical palpi that are variously spined.

Two tribes of the Suborder Palpatores are found in Mexico. One of these, the Tribe Dyspnoi, is characterized by the fact that its members have either no claws or very weak ones at the ends of the palpi. This group is not represented in Chiapas. The second tribe, Eupnoi, is characterized by the fact that its members have well-developed claws on the palpi. The genera *Liobumum*, *Geaya*, and *Prionostemma* are all representatives of this tribe, the members of which are found in Chiapas.

The only work previous to this present study on the opilionids

of Chiapas is that of Cambridge (1904). His work was based on material collected at random from various localities. Roewer (1923) attempted to fit these various species into his system of classification. A few forms have been described by Goodnight and Goodnight (1942a, 1942b, 1942c, 1944, 1945, 1946, 1947a, 1947b, 1947c, 1951), but no comprehensive study has been attempted before in this little-known region.

Holotypes of new species are deposited in the collections of the American Museum of Natural History.

SUBORDER LANIATORES THORELL

PHALANGODIDAE SIMON

PHALANGODINAE ROEWER

As was pointed out by Goodnight and Goodnight (1951), the present generic classification of the members of the family Phalangodidae has unreasonably multiplied the number of genera, making monotypic genera the rule rather than the exception. At present, except for the genus *Stygnomma* as revised by Goodnight and Goodnight (1951), the basis of generic differentiation has been the position and spination of the eye tubercle; the spination of the dorsal areas, the free tergites, and the anal operculum; the presence or absence of an anterior median spine on the femur of the palpus; the number of tarsal segments; and the degree of visibility of the spiracle. If each of the possible variations of a single character is considered to indicate a potential genus, the genera become legion.

Here, as in the study of the genus *Stygnomma*, it is shown that most of these characters are variable and can be used only in combination. A new character that seems to be of importance in giving additional clues as to generic relationships has been discovered. This is the presence or absence of a ventral spine on the maxillary lobe of the coxa of the second leg. This spine is not present in the members of any of the Mexican genera but is conspicuous in the members of the genus *Phalangodes* which are found in the United States and in some Old World forms.

We consider the presence, shape, and spination of the eye tubercle, the body shape, the number of segments in the first tarsus, and the presence or absence of a spine on the maxillary lobe to be of generic importance. By use of combinations of these characters, it is possible to establish a relatively small number of

genera which are clearly separated from one another. The Mexican and Central American phalangodids thus are divided into eight genera.

This study has also shown that the specific characters of dorsal spination, number of tarsal segments in the second, third, and fourth tarsi, and the armature of the eye tubercle are quite variable, and the species must be recognized accordingly. When this is kept in mind, it is once again demonstrated that many species have a wide range and possess variable breeding populations within that range.

The eight recognized genera can be separated by the following key:

KEY TO MEXICAN GENERA OF THE FAMILY PHALANGODIDAE

1. Cephalothorax without common eye tubercle ..... *Stygnomma*
   Cephalothorax with common eye tubercle 2
2. Eye tubercle in the form of a forward-pointing cone, three or four segments in the first tarsus; distitarsi of both first and second tarsi with two segments ..... *Paramitraceras*
   Eye tubercle not in the form of a forward-pointing cone; distitarsi of first tarsus with two segments, of second with three 3
3. First tarsus with three segments 4
   First tarsus with four or more segments 5
4. Eye tubercle with a median spine ..... *Pachylicus*
   Eye tubercle without median spine ..... *Cynortina*
5. First tarsus with more than four segments ..... *Hoplobunus*
   First tarsus with four segments 6
6. Dorsum with a lateral tubercle in the region of the first area ..... *Karos*
   Dorsum without such a tubercle 7
7. Eye tubercle in the form of a cone ..... *Phalangodinus*
   Eye tubercle not in the form of a cone ..... *Pellobunus*

CYNORTINA BANKS

Cynortina BANKS, 1909, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, p. 228. ROEWER, 1923, Die Weberknechte der Erde, p. 120. SØRENSEN, 1932, K. Danske Vidensk. Selsk. Skr., vol. 9, p. 263.

Stygnoleptes BANKS, 1914, Proc. Acad. Nat. Sci. Philadelphia, vol. 65, p. 682. ROEWER, 1931, Abhandl. Ver. Naturwiss. Bremen, vol. 28, p. 160. GOODNIGHT AND GOODNIGHT, 1947, Amer. Mus. Novitates, no. 1340, p. 2. (New synonymy.)

Ethobunus CHAMBERLIN, 1925, Bull. Mus. Comp. Zool., vol. 67, p. 245. ROEWER, 1928, Abhandl. Ver. Naturwiss. Bremen, vol. 26, p. 536. GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1198, p. 2. (New synonymy.)

Dapessus ROEWER, 1933, Ann. Naturhist. Mus. Wien, vol. 46, p. 279. (New synonymy.)

Mochlus (not Günther) ROEWER, 1933, Ann. Naturhist. Mus. Wien, vol. 46, p. 280. (New synonymy.)

Cippanus ROEWER, 1933, Ann. Naturhist. Mus. Wien, vol. 46, p. 278. (New synonymy.)

Piercenia ROEWER, 1934, Zool. Anz., vol. 106, no. 11, p. 304. (New synonymy.)

Hewus GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1184, p. 2. (New synonymy.)

Kalina GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1184, p. 2. (New synonymy.)

Azaca GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1184, p. 1. (New synonymy.)

Guerrobunus GOODNIGHT AND GOODNIGHT, 1945, Amer. Mus. Novitates, no. 1281, p. 1. (New synonymy.)

Resinthicus ROEWER, 1949, Senckenbergiana, vol. 30, nos. 1–3, p. 19. (New synonymy.)

Parisminia ROEWER, 1949, Senckenbergiana, vol. 30, nos. 1–3, p. 24. (New synonymy.)

Sphingonus ROEWER, 1949, Senckenbergiana, vol. 30, nos. 1–3, p. 26. (New synonymy.)

Glizotus ROEWER, 1949, Senckenbergiana, vol. 30, nos. 1–3, p. 28. (New synonymy.)

Letesia ROEWER, 1949, Senckenbergiana, vol. 30, nos. 1–3, p. 35. (New synonymy.)

Phalangodids with a common rounded eye tubercle which is usually removed from the anterior margin of the cephalothorax. Tubercle without a median spine and smooth or with small tubercles or spinules above. The abdominal scute with five dorsal areas, the first without a median line. Tarsi of third and fourth legs without scopulae and with simple untoothed double claws. Femur of first leg normal, not elongate or heavily spined. The tarsus of the first leg with three segments, distitarsus with two; distitarsus of second tarsus with three segments. The tarsi of the other legs have a varying number of segments. The metatarsi of the legs are not divided into astragali and calcanea. The maxillary lobe of the second coxa without a ventral projection. The secondary sexual characters of the male are variable, but usually consist only of heavier spines on the fourth leg.

GENOTYPE: *Cynortina tarsalis* Banks.

Cynortina acanthotibialis, new species

Figures 2–8

MALE HOLOTYPE: Total length of body, 2.4 mm. Cephalothorax, 0.6 mm. Width of body at widest portion, 1.6 mm.

Cephalothorax smooth, often with a few small tubercles on

	I	II	III	IV
Trochanter	0.2 mm.	0.2 mm.	0.2 mm.	0.4 mm.
Femur	0.7	1.0	0.7	1.0
Patella	0.3	0.4	0.4	0.7
Tibia	0.4	0.7	0.6	1.0
Metatarsus	0.7	0.9	0.8	1.0
Tarsus	0.5	0.9	0.7	0.7
Total	2.8 mm.	4.1 mm.	3.4 mm.	4.8 mm.

the anterior margin and scattered over the surface. Eye tubercle removed from the anterior margin, smooth above except for a few granulations. Abdomen with five areas, the boundaries of which are parallel to one another. First area without a median line, second, third, and fourth areas often strongly curved posteriorly. Each dorsal area with many hair-tipped tubercles. These are usually arranged in transverse rows. Lateral portion of scute with tuberculations. Each free tergite with a transverse row of larger spinose tubercles. These vary in size in the different specimens: in the males they are most often large and conspicuous, while in the females they are much smaller. Each free sternite with a transverse row of granulations. These often are enlarged into spines at the lateral portion. Anal operculum with heavy spines. Coxae granulate, fourth coxa with a distal posterior spine which partially conceals the spiracle.

Trochanters tuberculate, remainder of legs clothed throughout with hairs. Femora with many tuberculations, some of which are enlarged into spines on the ventral surface. On the fourth femur these spines are quite large, with the largest ones near the distal portion. Patellae tuberculate, often clavate in shape. Tibiae likewise tuberculate, the fourth tibia often having the tubercles enlarged into spines at the distal portion. Metatarsi with small tubercles. Tarsal segments: 3–6 or 7–5–5 or 6. Distitarsus of tarsus of first leg with two segments, second with three.

Palpus: trochanter, 0.2 mm. long; femur, 0.4; patella, 0.2; tibia, 0.3; and tarsus, 0.2. Total length, 1.3 mm. Palpus armed retrolaterally as in figure 4. Prolaterally the femur and patella each with a median apical spine; the tibia and tarsus armed as on the retrolateral surface.

Chelicera not enlarged. Smooth except for a few scattered tubercles on the anterior margin of the distal segment.

The entire body and appendages are reddish brown, with much darker brown markings which are especially abundant on the dorsal portion of the abdomen and on the legs.

FEMALE: Total length of body, 2.2 mm. Cephalothorax, 0.6 mm. Width of body at widest portion, 1.6 mm.

Similar in appearance to male, but with the spination of the legs reduced. The spines of the fourth tibia and femur are missing entirely.

TYPE LOCALITY: Male holotype and male and female paratypes from Finca Guatimoc, August 4, 1950.

Additional material was collected at Finca Guatimoc on the following dates: August 3 (one male and one female), August 7 (one male, four females), August 8 (two males, four females), and August 12 (two males). Further collections were made at the following localities: Finca Santa Martha, July 31 and August 1, 1950 (two males, two females, one immature); Puerto Madero, August 2, 1950 (two males, three females); Finca Monte Libano, July 4 and 5, 1950 (one male, two females); Finca El Real, July 1 and 6, 1950 (two males, one female); and Palenque, July, 1948 (two males, two females). All the above collections were made by C. and M. Goodnight.

VARIATIONS: With but one exception the animals from Finca Guatimoc had comparatively small spines on the free tergites and the anal operculum. One male was much larger than the other specimens (total length, 2.8 mm.), and the median spine of the anal operculum was extremely elongate, while the spines of the fourth leg were much heavier. The tarsal segments of these animals were 3–6–5–6.

The males from Puerto Madero had heavy spinose tubercles on the free tergites and anal operculum. They resembled the males from the Ocosingo Valley localities more closely than those from the Finca Guatimoc. Their tarsal segments were 3–6 or 7–5–6.

The males from El Real, Palenque, and Monte Libano had heavy spinose tubercles on the free tergites and anal operculum. The fourth tibia had only a small spine on the distal portion. The tarsal segments were 3–6–5–5.

RELATIONSHIPS: This species appears to be very closely related to *C. analis* (Banks); in fact it possibly is a subspecies. *C. analis* was originally described from Costa Rica, and no specimens have been reported from the area between Costa Rica and Chiapas. On the basis of this lack of information, it seems wiser to regard this as a separate species. The consistent difference in tarsal segments from those of *C. analis*, which has 3–6–4–5, and

the lack of the enlarged tibiae in the male constitute the chief distinguishing characteristics.

Cynortina pilosa, new species

Figure 9

MALE HOLOTYPE: Total length of body, 1.9 mm. Cephalothorax, 0.5 mm. Width of body at widest portion, 1.1 mm.

	I	II	III	IV
Trochanter	0.1 mm.	0.2 mm.	0.2 mm.	0.2 mm.
Femur	0.7	0.8	0.7	0.9
Patella	0.2	0.4	0.3	0.3
Tibia	0.5	0.7	0.6	0.6
Metatarsus	0.7	0.7	0.7	0.9
Tarsus	0.5	0.9	0.6	0.8
Total	2.7 mm.	3.7 mm.	3.1 mm.	3.7 mm.

Cephalothorax smooth. The eye tubercle bluntly rounded, on the anterior margin of the cephalothorax. Eye tubercle smooth above except for a few tiny dorsal granulations. Anterior margin of the cephalothorax with two lateral spinules. Abdomen with five areas, the boundaries of which are parallel. First area without a median line. Each area with at least one transverse row of hair-tipped tubercles, third area with two rows. The tubercles of the first and second areas are very tiny; the hairs tipping all the tubercles are very long, slanting posteriorly. The lateral margin of the scute with a row of small tubercles. A rounded structure is present between the cephalothorax and the first area. Part of this structure extends onto the cephalothorax and part extends onto the median portion of the first area. This structure is punctuated with many small depressions. Each free tergite with a transverse row of similar tubercles each armed with a long hair. Anal operculum with larger tubercles also armed with long hairs. Each free sternite with a transverse row of hair-tipped tubercles. Coxae with a few scattered tubercles. The maxillary lobe of the second coxa without a spine, triangular in shape. Spiracle visible, but partially concealed by the fourth coxa.

All segments of the legs except the tarsi with numerous small, hair-tipped tubercles. These hairs are quite long, and the tubercles are largest on the femora. First metatarsus somewhat clavate in appearance. First and fourth femora each with a ventral row of larger tubercles. Tarsal segments: 3–5–5–5. Distitarsus of first tarsus with two segments, second with three.

Palpus: trochanter, 0.1 mm. long; femur, 0.5; patella, 0.2; tibia, 0.4; and tarsus, 0.2. Total length, 1.4 mm. Palpus armed retrolaterally as in figure 9. Prolaterally the femur and patella each with an apical median spine. The tibia has three spines, and the tarsus has two large and two small ones on the prolateral margin.

Chelicera small, smooth except for a few small, hair-tipped tubercles on the anterior margin of the distal segment.

Color of dorsum reddish brown, with much darker brown on the abdomen, and much mottling on the cephalothorax. The median elevation between the cephalothorax and abdomen light yellow. Venter reddish brown. Legs and palpus dark brown, with some lighter mottling. Chelicerae yellowish, with some brown mottlings. The long hairs of the body and appendages are colorless.

FEMALE: Total length of body, 1.9 mm. Cephalothorax, 0.5 mm. Width of body at widest portion, 1.3 mm.

Similar in appearance to the male, but lacking the elevated area between the cephalothorax and abdomen. First metatarsus slender rather than clavate.

TYPE LOCALITY: Male holotype and female paratype from Finca Guatimoc, August 8, 1950. Additional material was collected at Finca Guatimoc on the following dates: August 6 (three females), August 7 (four females), August 12 (one male, one female). Additional material was collected at Unión Juarez, August 11, 1950 (one male, one female), and at Pichucalco, July 18, 1947 (two females). All collections made by C. and M. Goodnight.

RELATIONSHIPS: The unusually hairy appearance of this animal readily distinguishes it from other species of this genus. Further, the unusual rounded structure between the cephalothorax and abdomen of the male is unique.

HOPLOBUNUS BANKS

Hoplobunus BANKS, 1900, Jour. New York Ent. Soc., vol. 8, p. 200. CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 585. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 3, p. 149; 1923, Die Weberknechte der Erde, p. 112. GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1211, p. 1; 1945, Amer. Mus. Novitates, no. 1281, p. 3.

Haehnelia ROEWER, 1915, Arch. Naturgesch., vol. 81, sect. A, no. 3, p. 21; 1923, Die Weberknechte der Erde, p. 114. (New synonymy.)

Isaeus SØRENSEN, 1932, K. Danske Vidensk. Selsk. Skr., vol. 9, pp. 275–276. (New synonymy.)

Serrobunus GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1211, p. 2; 1945, Amer. Mus. Novitates, no. 1281, p. 3. (New synonymy.)

Chinquipellobunus GOODNIGHT AND GOODNIGHT, 1944, Amer. Mus. Novitates, no. 1249, p. 1; 1945, Amer. Mus. Novitates, no. 1281, p. 3. (New synonymy.)

Phalangodids with a common eye tubercle which is usually slightly removed from the anterior margin of the cephalothorax, variously armed above. Abdominal scute with five areas, the first without a median line. Tarsi of third and fourth legs simple, with untoothed double claws. Femur of first leg normal, not unusually elongate or heavily spined. Tarsus of first leg with five or more segments. Distitarsus of first tarsus with two segments, second with three. Metatarsi not divided into astragali and calcanea. Maxillary lobe of second coxa much reduced, without any ventral projection. Robust animals with long, heavy legs and with the spiracle widely expanded. Secondary sexual characters of the male variable.

GENOTYPE: *Hoplobunus barretti* Banks.

Members of this genus are at present unknown from the state of Chiapas.

KAROS GOODNIGHT AND GOODNIGHT

Karos GOODNIGHT AND GOODNIGHT, 1944, Amer. Mus. Novitates, no. 1249, p. 3.

Montabunus GOODNIGHT AND GOODNIGHT, 1945, Amer. Mus. Novitates, no. 1281, p. 2. (New synonymy.)

Monterella GOODNIGHT AND GOODNIGHT, 1945, Amer. Mus. Novitates, no. 1281, p. 2. (New synonymy.)

Chapulobunus GOODNIGHT AND GOODNIGHT, 1946, Amer. Mus. Novitates, no. 1310, p. 1. (New synonymy.)

Potosa GOODNIGHT AND GOODNIGHT, 1947, Fieldiana: Zool., vol. 32, no. 1, pp. 8, 9. (New synonymy.)

Phalangodids with a common eye tubercle which is usually removed from the anterior margin of the cephalothorax. It is variously armed above. Abdominal scute with five areas, the boundaries of which are parallel to one another. The first area is without a median line. The tarsi of the third and fourth legs simple, with untoothed double claws. Femur of first leg normal, not unusually elongate or heavily spined. Tarsus of first leg with four segments. Distitarsus of first tarsus with two segments, second with three. Metatarsi not divided into astragali and calcanea. Maxillary lobe of second coxa without a ventral projection. Fairly robust animals,

with a large tubercle on the lateral margin of the scute in the region of the first area.

GENOTYPE: *Karos barbarikos* Goodnight and Goodnight.

Like *Hoplobunus*, this genus has no known representatives in Chiapas.

PACHYLICUS ROEWER

Metapachylus (*non* Cambridge, 1904) BANKS, 1909, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, p. 230.

Paramitraceras (part) ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 3, p. 155.

Pachylicus ROEWER, 1923, Die Weberknechte der Erde, p. 118.

Cerroa ROEWER, 1928, Abhandl. Ver. Naturgesch. Bremen, vol. 26, p. 533. (New synonymy.)

Mexscotolemon GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1163, p. 1. (New synonymy.)

Brima ROEWER, 1949, Senckenbergiana, vol. 30, p. 19. (New synonymy.)

Phalangodids with a common eye tubercle which is usually located on the anterior margin of the cephalothorax. Eye tubercle with a single prominent median spine. Abdominal scute with five areas, the boundaries of which are parallel to one another. First area without a median line. Tarsi of third and fourth legs without scopulae and with untoothed claws. Femur of first leg normal, not elongate or spinose. Tarsus of first leg with three segments; distitarsus of first tarsus with two segments, second with three. Metatarsi not divided into astragali and calcanea. Maxillary lobe of second coxa without a ventral projection. Chelicera normal. Secondary sexual characteristics variable, often lacking.

GENOTYPE: *Pachylicus rugosus* Banks.

Pachylicus acutus (Goodnight and Goodnight)

Figure 10

Mexscotolemon acutus GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1163, pp. 1, 2, figs. 3–5.

MALE: Total length of body, 2.5 mm. Cephalothorax, 0.8 mm. Width of body at widest portion, 2 mm.

Body pyriform in shape. Dorsum finely granulate, cephalothorax without tuberculations. Eye tubercle on the anterior margin of the cephalothorax, with a median spine. Abdominal segments without median armature. Fifth area and each free tergite

	I	II	III	IV
Trochanter	0.3 mm.	0.5 mm.	0.4 mm.	0.7 mm.
Femur	1.4	3.2	1.7	4.3
Patella	0.5	1.2	0.6	1.0
Tibia	1.0	2.7	1.3	3.8
Metatarsus	1.6	3.7	2.1	4.6
Tarsus	0.8	2.0	0.8	1.0
Total	5.6 mm.	13.3 mm.	6.9 mm.	15.4 mm.

with a transverse row of tubercles which are enlarged into small spines in the median portion of the third free tergite. Anal operculum with small tuberculations. Free sternites and coxae with granulations, third coxa with an anterior and posterior row of small teeth. Fourth coxa partially concealing the spiracle. Maxillary lobe of second coxa triangular, without a ventral projection.

Legs clothed throughout with hairs, surface finely granulate, but without many tuberculations. Tarsal segments: 3–7–5–5. Distitarsus of first tarsus with two segments, second with three.

Palpus: trochanter, 0.2 mm. long; femur, 0.7; patella, 0.2; tibia, 0.4; and tarsus, 0.4. Total length, 1.9 mm. Palpus armed retrolaterally as in figure 10; prolaterally the femur and patella each with an apical median spine. Tibia with three spines and tarsus with two on the prolateral margin.

Chelicera normal, smooth except for a few scattered hairs.

Entire animal reddish brown, dorsum somewhat darker, the areas being vaguely outlined in a darker brown color. Palpi, chelicerae, and distal portions of legs lighter.

FEMALE: Total length of body, 2.5 mm. Cephalothorax, 0.8 mm. Width of body at widest portion, 1.9 mm.

Female identical in appearance with male. The fourth leg is usually much shorter.

RECORDS: Ocosingo, June 24, 1950 (Stannard and Goodnights); Toniná, June 28, 1950 (one male, one female) (Stannard and Goodnights); Finca San Antonio, June 29, 1950 (two females) (Stannard and Goodnights); Finca El Real, June 30, July 1 and 6, 1950 (numerous specimens) (Stannard and Goodnights); Finca Tecoja, July 2, 1950 (one female); Pichucalco, July 18, 1947 (two females, one male); and Baños de Azufre, August 1, 1948 (seven males, four females). All the above localities are in Chiapas, and, except where noted, the collections were made by C. and M. Goodnight. Further records are from the state of Tabasco: Teapa, July 16, 1947 (11 females) (C. and M. Goodnight); Santa Rosa, August 16,

1945 (one female) (F. Bonet); and Jonuta, August 16, 1945 (two females) (F. Bonet).

VARIATIONS: This abundant and widespread phalangodid is subject to some variation through its range. We have collected this particular species in many localities throughout Chiapas, Tabasco, Veracruz, Campeche, Yucatan, and Oaxaca. The chief variation noticed in these numerous specimens was that those from Oaxaca had less pronounced tubercles on the third free tergite than did those from Yucatan. This was a gradual transition in which animals from intermediate areas (Tabasco, for example) had tubercles intermediate in size.

PARAMITRACERAS CAMBRIDGE

Paramitraceras CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 575. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 3, p. 155 (in part); 1923, Die Weberknechte der Erde, p. 117.

Panzosus ROEWER, 1949, Senckenbergiana, vol. 30, nos. 1–3, p. 12. (New synonymy.)

Solola ROEWER, 1949, Senckenbergiana, vol. 30, nos. 1–3 p. 30. (New synonymy.)

Phalangodids with a common eye tubercle which is located on the anterior margin of the cephalothorax. Eye tubercle in the form of a forward-slanting, pointed cone. Abdominal scute with five areas, the first without a median line. On each side of the first area, there is a small lateral enlargement. Tarsi of third and fourth legs without scopulae and with untoothed claws. Femur of first leg not enlarged. Tarsus of first leg with three or four segments. Distitarsus of first tarsus with two segments; second also with two. Metatarsi of legs not divided into calcanea and astragali. Maxillary lobe of second coxa without a ventral projection. Chelicera enlarged, palpus usually heavy, with little ventral spination. Secondary sexual characters of the male usually seen in the heavier chelicerae.

GENOTYPE: *Paramitraceras granulatus* Cambridge.

Paramitraceras granulatus Cambridge

Figures 11, 12

Paramitraceras granulatus CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 575, pl. 54, figs. 3, 3a, 3b. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 3, p. 155; 1923, Die Weberknechte der Erde, p. 117, fig. 117. GOODNIGHT AND GOODNIGHT, 1944, Amer. Mus. Novitates, no. 1249, pp. 6, 7, figs. 10–12.

Paramitraceras chichivaca GOODNIGHT AND GOODNIGHT, 1947, Fieldiana: Zool., vol. 32, no. 1, pp. 5–6, fig. 2. (New synonymy.)

Panzosus hispidulus ROEWER, 1949, Senckenbergiana, vol. 30, nos. 1–3, p. 12, pl. 1, figs. 3a-f. (New synonymy.)

Solola robusta ROEWER, 1949, Senckenbergiana, vol. 30, nos. 1–3, p. 30, pl. 6, figs. 45a-d. (New synonymy.)

MALE: Total length of body, 6.2 mm. Cephalothorax, 1.9 mm. Width of body at widest portion, 4.8 mm.

	I	II	III	IV
Trochanter	0.4 mm.	0.6 mm.	0.6 mm.	0.7 mm.
Femur	2.5	2.4	2.4	3.5
Patella	0.7	1.4	0.9	1.4
Tibia	1.5	2.4	2.1	2.7
Metatarsus	2.0	2.7	2.7	3.6
Tarsus	1.4	1.9	1.4	1.4
Total	8.5 mm.	11.4 mm.	10.1 mm.	13.3 mm.

Cephalothorax smooth, eye tubercle in the form of a pointed cone, with the eyes at the base. Tubercle on the anterior margin and pointed slightly forward, covered with tuberculations. Dorsum with five distinct areas, first without a median line. All areas thickly covered with hair-tipped tubercles. The lateral margin of the dorsal scute with a row of hair-tipped tubercles. In the region of the first area is a small lateral enlargement. Each free tergite covered with hair-tipped tubercles. Anal operculum covered likewise with small hair-tipped tubercles. Each free sternite with a transverse row of hair-tipped tubercles. Coxae with scattered hairs, a few scattered tuberculations on their surfaces. Several rows of large tubercles on the first coxa. Third with an anterior and posterior row of teeth. Spiracles clearly visible.

Legs clothed throughout with hairs. Trochanters, femora, patellae, and tibiae with many tuberculations. Fourth femur curved. Tarsal segments: 3– or 4–4–5–5. Distitarsi of both first and second tarsi each with two segments.

Palpus: trochanter, 0.8 mm. long; femur, 1.8; patella, 0.8; tibia, 1.3; and tarsus, 1.7. Total length, 6.4 mm. Palpus armed retrolaterally as in figure 12, with a noticeable projection at the distal portion of the tibia. Prolaterally the palpus is clothed with hairs but has no definite spines. A similar projection is present at the distal portion of the tibia, and there are a few small tubercles on the tarsus.

Chelicera with a few scattered hairs, the proximal segment with a slight dorsal elevation, distal segment somewhat enlarged.

Entire body and appendages dark reddish brown. Lateral projection in the region of the first area somewhat lighter. Palpus and chelicera very slightly lighter than the dorsum.

FEMALE: Total length of body, 5.5 mm. Cephalothorax, 2.2 mm. Width of body at widest portion, 4.3 mm.

Similar in appearance to the male, but having much smaller chelicerae.

RECORDS: Finca Guatimoc, August 6, 1950, 5800 feet (three males, four females, one immature); August 8, 1950, 5000 feet, (two males, one female); and August 12, 1950, 4000–5000 feet (two males, two females). San Cristobal Las Casas, July 12 and 14, 1950 (one male, one female, one immature); Cruz Quemada, July 24, 1950 (one male, one immature); and Pichucalco, July 17, 1947 (one male). All collections by C. and M. Goodnight.

VARIATIONS: It appeared to us that the material from Finca Guatimoc was most nearly like that originally studied by Cambridge. In these animals, the eye tubercle was more markedly prolonged than in the others. The animals from Las Casas and Cruz Quemada, for example, had much blunter eye tubercles. The male from Pichucalco had the spines at the ends of the third and fourth femora and the fourth tibia much larger. Also the entire body was somewhat more hairy than in those animals from the other localities.

Paramitraceras femoralis, new species

Figures 13, 14

MALE HOLOTYPE: Total length of body, 4.8 mm. Cephalothorax, 1.3 mm. Width of body at widest portion, 3.3 mm.

	I	II	III	IV
Trochanter	0.4 mm.	0.4 mm.	0.4 mm.	0.5 mm.
Femur	1.4	1.8	1.5	1.8
Patella	0.7	0.8	0.7	0.8
Tibia	1.0	1.4	1.1	1.5
Metatarsus	1.0	1.5	1.6	1.9
Tarsus	0.7	1.0	0.7	0.8
Total	5.2 mm.	6.9 mm.	6.0 mm.	7.3 mm.

Cephalothorax smooth, eye tubercle large, cone-shaped, on the anterior margin of the cephalothorax, armed above with many

hair-tipped tubercles. Abdominal scute thickly covered with hair-tipped tubercles. First area without a median line, considerably wider than the remaining areas. Lateral margin of the scute with a row of tubercles. Each free tergite with many hair-tipped tubercles. Anal operculum thickly covered with hair-tipped tubercles; each free sternite with a transverse row of smaller tubercles. Coxae with a few scattered tubercles and hairs, third coxa with a posterior row of teeth; fourth coxa with a distal-ventral projection which extends to the neighboring free sternites. This projection hides the spiracle.

Trochanters of the legs with scattered hair-tipped tubercles. Femora also with many of these, fourth femur curved and with a large rounded projection on the ventral portion at the proximal portion of the distal third. Patellae, tibiae, and metatarsi with many hair-tipped tubercles which are heaviest on the fourth leg. Tarsal segments: 3–4–5–5. Distitarsi of both first and second tarsi with two segments.

Palpus: trochanter, 0.4 mm. long; femur, 1.0; patella, 0.6; tibia, 0.9; and tarsus, 0.8. Total length, 3.7 mm. Palpus armed retrolaterally as in figure 13. Prolaterally unarmed.

Chelicera small. Proximal segment smooth except for a few small dorsal projections at the median portion. Distal segment smooth except for a few anterior, small, hair-tipped tubercles. A row of small teeth along the median margin of the fixed claw.

Dorsum dark brown, somewhat lighter on the cephalothorax. Venter and coxae dark brown, with lighter mottlings. Appendages somewhat lighter, with darker brown mottlings. Some of the specimens were lighter than this in color.

FEMALE: Total length of body, 3.6 mm. Cephalothorax, 1.2 mm. Width of body at widest portion, 2.4 mm.

Similar in appearance to the male, but lacking the projection on the femur of the fourth leg. The remainder of the legs are somewhat less tuberculate.

TYPE LOCALITY: Male holotype and male and female paratypes from Pichucalco, July 17, 1947 (six males, four females). Additional material from Teapa, Tabasco, July 16, 1947 (two females) and from Finca Guatimoc, August 8, 1950 (one female). All collections by C. and M. Goodnight.

RELATIONSHIPS: *Paramitraceras femoralis* appears to be very closely related to *P. hispidulus* Cambridge; in fact, it may even be that species. In his description, however, Cambridge makes no

mention of the rounded projection on the femur of the fourth leg of the male. For this reason, it appears best to consider this a new species. *P. femoralis* differs from *P. granulatus* Cambridge in its smaller size, more tuberculate appearance, and in the presence of the projection on the fourth femur.

Paramitraceras parvulus, new species

Figure 15

MALE HOLOTYPE: Total length of body, 3.9 mm. Cephalothorax, 1.3 mm. long. Width of body at widest portion, 2.8 mm.

	I	II	III	IV
Trochanter	0.2 mm.	0.4 mm.	0.4 mm.	0.4 mm.
Femur	1.3	1.7	1.3	1.7
Patella	0.5	0.7	0.6	0.7
Tibia	0.8	1.3	1.0	1.4
Metatarsus	1.0	1.4	1.3	1.7
Tarsus	0.9	1.3	0.9	1.0
Total	4.7 mm.	6.8 mm.	5.5 mm.	6.9 mm.

Cephalothorax smooth, anterior margin without tubercles. Eye tubercle directly on the anterior margin, in the form of a rounded cone slanting slightly forward, with a few small tuberculations above. Abdomen with five distinct areas, the first without a median line. All areas thickly covered with hair-tipped tubercles. Lateral margin of the scute with a row of tubercles. In the region of the first area is a small lateral projection which is somewhat lighter in color. Each free tergite covered with hair-tipped tubercles. Anal operculum with many small hair-tipped tubercles. Free sternites without tuberculations or hairs. Spiracles fully exposed. Coxae with scattered small tuberculations. A row of teeth on the posterior margins of the second and third coxae.

Legs clothed throughout with hairs. Femora with tuberculations which are particularly prominent on the first and fourth. Fourth femur has seven small spines along the prolateral margin, entire femur curved. Tarsal segments: 4–5–5–5. Distitarsi of both first and second tarsi with two segments.

Palpus: trochanter, 0.4 mm. long; femur, 1.1; patella, 0.5; tibia, 0.7; and tarsus, 1. Total length, 3.7 mm. Palpus armed retrolaterally as in figure 15. Prolaterally armed with small tuberculations, but without special spines.

Chelicera enlarged, smooth except for scattered hairs and a few small tuberculations.

Dorsum reddish brown, with much darker brown mottling on the cephalothorax and eye tubercle. The central portion of each area and each free tergite dark brown. A dark brown strip along the lateral margin. This contrasts strongly with the light-colored projection near the first area. Venter reddish brown, with some darker markings, but lighter than the dorsum. Appendages light reddish brown, with darker mottlings.

TYPE LOCALITY: Male holotype from Tenejapa, July 22, 1950. Collected by C. and M. Goodnight.

RELATIONSHIPS: This species appears to be most closely related to *P. femoralis*. It differs, however, in lacking the rounded projection on the femur of the fourth leg and in having a larger number of tubercles along the retrolateral margin of the palpus. Also, this species is considerably smaller than either *P. femoralis* or *P. granulatus*.

PELLOBUNUS BANKS

Pellobunus BANKS, 1905, Proc. Ent. Soc. Washington, vol. 7, p. 21. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 3, p. 146 (in part); 1923, Die Weberknechte der Erde, p. 111. GOODNIGHT AND GOODNIGHT, 1947, Amer. Mus. Novitates, no. 1340, p. 2.

Phalangodids with a common eye tubercle, usually removed from the anterior margin of the cephalothorax, without a median spine. Surface smooth or with small granulations above. Abdominal scute with five areas, first without a median line. Tarsi of third and fourth legs simple, with untoothed double claws. Femur of first leg normal, not elongate or heavily spined. Tarsus of first leg with four segments; distitarsus of first tarsus with two segments, second with three. Metatarsi not divided into astragali and calcanea. Maxillary lobe of second coxa without a ventral projection. Secondary sexual characters of the male variable, usually not very pronounced.

GENOTYPE: *Pellobunus insularis* Banks.

This genus has no known representatives in Chiapas.

PHALANGODINUS ROEWER

Phalangodinus ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A., no. 3, p. 143; 1923, Die Weberknechte der Erde, p. 109.

Sempalus ROEWER, 1949, Senckenbergiana, vol. 30, nos. 1–3, p. 41. (New synonymy.)

Phalangodids with a common eye tubercle which is located

on the anterior margin of the cephalothorax, in the form of a rounded cone. Abdominal scute with five areas, the first without a median line. Tarsi of third and fourth legs without scopulae and with untoothed claws. Femur of first leg normal, not elongate. Tarsus of first leg with four segments; distitarsus of first tarsus with two segments, of second with three. Metatarsi not divided into astragali and calcanea. Maxillary lobe of second coxa without a ventral projection. Chelicera slightly enlarged. Secondary sexual characteristics of the male noted in the enlarged chelicerae.

GENOTYPE: *Phalangodinus surinamensis* Roewer.

Phalangodinus macrochelis, new species

Figures 16, 17

MALE HOLOTYPE: Total length of body, 2.3 mm. Cephalothorax, 0.8 mm. Width of body at widest portion, 1.8 mm.

	I	II	III	IV
Trochanter	0.3 mm.	0.3 mm.	0.3 mm.	0.4 mm.
Femur	0.8	1.2	1.0	1.2
Patella	0.4	0.6	0.4	0.5
Tibia	0.6	1.0	0.8	1.1
Metatarsus	0.9	1.1	1.1	1.4
Tarsus	0.7	1.2	0.8	1.0
Total	3.7 mm.	5.4 mm.	4.4 mm.	5.6 mm.

Cephalothorax smooth, with a few granulations along the lateral margin. Eye tubercle nearly on the anterior margin, in the form of a rounded cone with the eyes widely separated at the base, with a few tubercles on the dorsal surface. Abdomen with five distinct areas, entire dorsum granulate. A transverse row of small tubercles across each area and each free tergite. These tubercles are somewhat larger on the fifth area and on the free tergites. First area without a median line, lateral margin of the scute with a row of small tubercles. Anal operculum with scattered small tuberculations. Each free sternite with a transverse row of small, hair-tipped tubercles. Coxae granulate, first and second coxae each with a row of small tuberculations. Spiracle concealed. Maxillary lobe of second coxa triangular in shape, without a spine.

Legs clothed throughout with hairs, a few small tubercles on the femora. In general, however, the legs are quite smooth. Third metatarsus with a conspicuous enlargement in the median por-

tion. Tarsal segments: 4–6–5–6. Distitarsus of tarsus of first leg with two segments, second with three.

Palpus: trochanter, 0.4 mm. long; femur, 0.8; patella, 0.5; tibia, 0.6; and tarsus, 0.5. Total length, 2.8 mm. Palpus armed retrolaterally as in figure 16. Prolaterally the femur and patella each has an apical median spine, the tibia has two median spines, and the tarsus has two.

Chelicera enlarged, proximal segment smooth, distal segment wedge-shaped, with a median anterior row of hair-tipped tubercles. The proximal one of this latter row is quite prominent. Movable claw armed with prominent teeth as in figure 17. Fixed claw unarmed.

Color of dorsum reddish brown, with darker brown mottlings on the cephalothorax, the median portion of the areas, and the median portion of the free tergites. Venter and coxae reddish brown, with darker brown mottlings. Legs with darker and lighter areas, giving a vaguely annulate appearance. Palpus and chelicera reddish brown, with darker brown mottlings particularly on the proximal portion of the palpus.

FEMALE: Total length of body, 2.3 mm. Cephalothorax, 0.8 mm. Width of body at widest portion, 2.0 mm.

Similar in appearance to the male, but the chelicerae are not enlarged, and the enlargement of the third metatarsus is lacking.

TYPE LOCALITY: Male holotype and male and female paratypes from Ocosingo, June 25, 1950 (three males, three females). One female paratype from Finca El Real, July 6, 1950. These animals were collected by L. Stannard and C. and M. Goodnight.

RELATIONSHIPS: *Phalangodinus macrochelis* differs from *P. surinamensis* Roewer in having more segments in the second tarsus and a differently shaped eye tubercle.

STYGNOMMA ROEWER EMEND. GOODNIGHT

Phalangodes PACKARD, 1888, Mem. Natl. Acad. Sci., Washington, vol. 4, p. 52 (in part).

Scotolemon BANKS, 1901, Amer. Nat., vol. 35, p. 671 (in part).

Neoscotolemon ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 3, p. 149 (in part); 1923, Die Weberknechte der Erde, pp. 112–113.

Stygnomma ROEWER, 1912, Mém. Soc. Sci. Nat. Neuchâtel, vol. 5, p. 155; 1923, Die Weberknechte der Erde, p. 144. PETRUNKEVITCH, 1925, Trans. Connecticut Acad. Arts Sci., vol. 27, pp. 62–63. GOODNIGHT AND GOODNIGHT, 1951, Amer. Mus. Novitates, no. 1491, p. 3.

Zygobunus CHAMBERLIN, 1925, Bull. Mus. Comp. Zool., vol. 62, p. 245.

ROEWER, 1927, Abhandl. Naturwiss. Ver. Bremen, vol. 26, pp. 545–546. GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1198, p. 4.

Stygnommatiplus ROEWER, 1927, Abhandl. Ver. Naturwiss. Bremen, vol. 26, p. 543.

Poascola ROEWER, 1933, Ann. Naturhist. Mus. Wien, vol. 46, p. 281.

Antagona GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1184, p. 6.

Citranus GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1188, p. 4.

Rula GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1188, p. 13; 1945, Ciencia, vol. 6, no. 2, pp. 62–63.

Flaccus GOODNIGHT AND GOODNIGHT, 1947, Fieldiana: Zool., vol. 32, no. 1, pp. 9–10.

Stygnommatidae MELLO LEITAO, 1949, Bol. Mus. Nac., Rio de Janeiro, no. 94, p. 5.

Members of the family Phalangodidae without a common eye tubercle and with five dorsal areas on the abdominal scute, the first without a median line. Tarsi of third and fourth legs without scopulae and with simple untoothed double claws. Femur of first leg normal. Distitarsus of first tarsus with two segments; second with two or three. Metatarsi not divided into astragali and calcanea. Palpus and chelicera somewhat enlarged, varying in individual species. Maxillary lobe of second coxa without a ventral projection. Secondary sexual characters of the male occur in the increased spination of the palpus and chelicera and in the enlargement of some portion of the metatarsus of the third leg.

GENOTYPE: *Stygnomma fuhrmanni* Roewer.

Stygnomma bispinata, new species

Figure 18

MALE HOLOTYPE: Total length of body, 2.7 mm. Cephalothorax, 0.9 mm. Width of body at widest portion, 1.9 mm.

	I	II	III	IV
Trochanter	0.3 mm.	0.5 mm.	0.6 mm.	0.6 mm.
Femur	1.7	2.7	2.3	3.0
Patella	0.4	0.6	0.7	0.8
Tibia	1.4	2.4	1.7	2.1
Metatarsus	1.9	2.7	2.4	3.2
Tarsus	1.2	2.1	1.5	1.9
Total	6.9 mm.	11.0 mm.	9.2 mm.	11.6 mm.

Cephalothorax strongly arched, covered with small tubercles, without a median spine, anterior margin with two small tubercles

at the lateral portion. Eyes not on a common tubercle, widely separated. Abdominal scute with five distinct areas, each covered with tubercles which are indefinitely arranged in rows. First area without a median line. Fourth area with a pair of large diverging spines. A lateral row of tubercles along the margin of the scute. Each free tergite with a transverse row of tubercles as well as smaller scattered tubercles. Anal operculum thickly tuberculate. Each free sternite with a transverse row of tuberculations. Spiracles partly concealed by the fourth coxa, ventral surface of the coxa thickly tuberculate and with scattered hairs. Third coxa with anterior and posterior rows of teeth.

Trochanter of legs with scattered hairs and tubercles. Femora with heavy tubercles more or less arranged in rows, fourth femur slightly curved at the distal portion. Patellae tuberculate, third and fourth tibiae heavily tuberculate, remainder of legs with hairs but without heavy tuberculations. First and second legs much more slender than the third and fourth. Third metatarsus with the characteristic enlargement in the distal half. Tarsal segments: 6–10–7–7. Distitarsus of first tarsus with two segments, second with three.

Palpus: trochanter, 0.5 mm. long; femur, 1.4; patella, 0.8; tibia, 0.9; and tarsus, 0.8. Total length, 4.4 mm. Tarsal claw, 0.8 mm. long. Palpus armed retrolaterally as in figure 18; prolaterally the femur has two apical median spines, the patella has one with a second in the medan portion. The tibia has two large spines and one small spine, while the tarsus has three spines on the prolateral margin.

Chelicera greatly enlarged, with a few scattered hairs and tubercles, but in general smooth.

Body reddish brown, with some darker brown mottlings on the dorsum, particularly on the lateral portion of the cephalothorax. Legs except for the tarsi and the femur of the palpus with much dark brown mottling. Chelicera and remainder of palpus reddish brown, much paler than body.

Type Locality: Male holotype from Finca Guatimoc, between 4000 and 5000 feet, under a moist log, August 12, 1950. Collected by C. and M. Goodnight.

Relationships: This species differs from the other known members of this genus in having two large divergent spines on the fourth area of the dorsum.

Stygnomma plana, new species

Figure 19

FEMALE HOLOTYPE: Total length of body, 2 mm. Cephalothorax, 0.5 mm. Width of body at widest portion, 1.3 mm.

	I	II	III	IV
Trochanter	0.1 mm.	0.2 mm.	0.2 mm.	0.2 mm.
Femur	0.7	1.0	0.8	1.0
Patella	0.2	0.4	0.2	0.4
Tibia	0.5	0.8	0.6	0.8
Metatarsus	0.6	0.8	0.9	1.2
Tarsus	0.6	1.0	0.5	0.4
Total	2.7 mm.	4.2 mm.	3.2 mm.	4.0 mm.

Cephalothorax granulate but without tuberculations, anterior margin smooth. Eyes widely separated, no common eye tubercle present. Abdomen with five areas, first without a median line. Surface of areas granulate but not tuberculate. Free tergites and anal operculum smooth. Free sternites smooth. Coxae likewise smooth except for a few scattered granulations. Very small teeth present on the anterior and posterior margins of the third coxa. Spiracle visible although partially hidden by the fourth coxa.

Legs with scattered hairs but otherwise smooth. Fourth femur somewhat curved. Tarsal segments: 5–5–6–6. Distitarsi of both first and second tarsi with but two segments.

Palpus: trochanter, 0.1 mm. long; femur, 0.7; patella, 0.3; tibia, 0.5; and tarsus, 0.4. Total length, 2 mm. Palpus armed retrolaterally as in figure 19. Prolaterally the femur has two hair-tipped spines in the median portion; the patella has one apical-median hair-tipped spine; and the tibia and tarsus each have three hair-tipped spines.

Chelicera small, smooth except for a few scattered hairs and a few small tuberculations on the anterior portion of the distal segment.

Entire body reddish brown, with much darker brown markings. Most of the abdominal areas somewhat darker, with an interlacing pattern of darker brown on the cephalothorax. Legs mottled dusky brown and yellowish brown, in general giving an appearance of a darker color. Palpus and chelicera yellowish except for the femur of the palpus which is darker.

TYPE LOCALITY: Female holotype from San Cristobal Las Casas, July 12, 1950. Collected by L. Stannard and C. Goodnight.

RELATIONSHIPS: *Stygnomma plana* is most closely related to *S. teapensis* Goodnight and Goodnight, but is much larger in size.

Stygnomma spinipalpis, new species

Figure 20

MALE HOLOTYPE: Total length of body, 1.9 mm. Cephalothorax, 0.7 mm. Width of body at widest portion, 1.4 mm.

	I	II	III	IV
Trochanter	0.2 mm.	0.2 mm.	0.2 mm.	0.2 mm.
Femur	0.9	1.3	0.9	1.1
Patella	0.4	0.5	0.3	0.4
Tibia	0.6	1.0	0.7	1.1
Metatarsus	0.7	1.1	0.9	1.2
Tarsus	0.7	1.2	0.8	1.0
Total	3.5 mm.	5.3 mm.	3.8 mm.	5.0 mm.

Cephalothorax finely granulate, strongly arched. Eyes not on common eye tubercle with a spine between them. This spine is slanted slightly forward and has a shorter spine behind it. Dorsum granulate, with five poorly defined areas, the first without a median line. A transverse row of very small tubercles across each area and each free tergite. These are somewhat larger on the free tergites. A lateral row of very fine tubercles on the abdominal scute. Anal operculum covered with small setiferous tubercles. Each free sternite with a transverse row of small tuberculations. Coxae tuberculate, with a posterior and anterior row of teeth on the third coxa. Anterior margin of the fourth coxa with three or four larger tubercles. Fourth coxa expanded so as to hide the spiracle partially.

Trochanter globular, tuberculate. Femora tuberculate, with larger tuberculations on the fourth femur. Remainder of legs smooth except for scattered hairs. Third metatarsus with a very slight enlargement at the distal half. First metarsus and second metatarsus each with a false articulation. Tarsal segments: 4–6–5–6. Distitarsi of both first and second tarsi with two segments.

Palpus: trochanter, 0.2 mm. long; femur, 0.8; patella, 0.5; tibia, 0.7; and tarsus, 0.6. Total length, 2.8 mm. Palpus armed retrolaterally as in figure 20. Prolaterally armed as follows: femur with a row of dorsal-median tubercles which are not visible from the retrolateral view, also with a median apical tubercle

which is more prominent in some specimens than in others; patella with a median apical tubercle; tibia and tarsus armed as on retrolateral margin. Tarsal claw long and curved.

Chelicera much enlarged; proximal segment with a lateral row of tubercles and dorsal tuberculations including one large curved spine in the median region. Distal segment swollen and armed with low tubercles and hairs. Claws curved inwards.

Color of body, chelicera, and palpus reddish yellow. The dorsum has an interlacing effect of brownish mottlings. Legs lighter, mottled with much dark brown.

FEMALE: Total length of body, 2.2 mm. Cephalothorax, 0.8 mm. Width of body at widest portion, 1.5 mm.

Similar in appearance to the male but lacking the enlargement of the chelicera and the swelling of the third metatarsus. Also the spines of the palpal femur are somewhat reduced.

TYPE LOCALITY: Male holotype and male and female paratypes from the Ruins of Palenque, July 15, 1949 (five males, one female); other paratypes from the same locality, July, 1948 (one male, three females). Collected by C. and M. Goodnight.

RELATIONSHIPS: This species is very closely related to *S. maya* Goodnight and Goodnight. It differs from the latter species chiefly in having spines on the dorsal portion of the palpus and on the first segment of the chelicera. Possibly further collections will show that this is but a subspecies of *S. maya*.

Stygnomma teapensis Goodnight and Goodnight

Stygnomma teapensis GOODNIGHT AND GOODNIGHT, 1951, Amer. Mus. Novitates, no. 1491, pp. 16–17, figs. 22, 23.

RECORDS: Monte Libano, July 4 and 5, 1950 (one female), and Finca San Antonio, July 9, 1950 (one male, one female). This last collection was made in a moist area along a small stream. Both collections by C. and M. Goodnight.

COSMETIDAE SIMON

COSMETINAE CAMBRIDGE

Under the present system of classification of the family Cosmetidae, a large number of genera, many containing but a single species, have been established. Inasmuch as there are so many monotypic genera, all natural relationships have been completely obscured. These numerous genera are based on differences in

tarsal segments and the armature of the dorsal areas, free tergites, and anal operculum. On the basis of a small number of specimens, this method appears to be useful, but if each possible combination of spines, tubercles, and tarsal segments is considered to be a potential genus, the number of possible genera becomes astronomical.

Fortunately this condition does not exist. In studies made on long series of animals, greater variation was found than previously published reports would lead one to expect. For example, it was found that, in almost every instance, variations of tarsal segments in the second, third, and fourth tarsi existed in all species. The only tarsus that appeared to have a constant number of segments was the first. In rare specimens, even this varied occasionally. In nearly all cases, however, the first tarsus had five, six, or more than six segments. The spination on the back was equally variable. In some instances, one individual had well-developed spines on an area; another had them reduced to tubercles; and still others lacked them entirely.

Another character that had been used as a basis of generic differentiation was the degree of development of the fourth legs of the male. Here again, all degrees of variation were noted. At times, even in a single species, different populations had varying degrees of incrassation. These differences will become more apparent as the various species are discussed.

For the above reasons, it has been thought best to consider the Mexican cosmetids as belonging in three genera which differ from one another in the number of tarsal segments in the first tarsus. This, as has been noted, is the only constant character found which can be used to separate the various genera of this relatively homogeneous family. These three genera are: *Vonones*, with five segments in the first tarsus; *Cynorta*, with six; and *Paecilaema*, with more than six.

Specific differentiation and variation also present problems. Previously dorsal color pattern, size, and minor variations in the spination of the back and legs were considered important. On the basis of the assumption that these characters were invariable, many synonyms have been created.

In this study the writers have found that all these characters, i.e., color pattern, tarsal segmentation, spination of the back, and leg armature are valuable. They must, however, be used in combination, with a full realization that different breeding popu-

lations differ from one another. At times, even a single population demonstrates considerable variability. This illustrates the danger of setting up specific characters on the basis of individual specimens or even single populations.

If these facts are kept in mind and applied to the actual problems in the field, some understanding of the distribution of the cosmetids is possible. It becomes apparent that they are wide-ranging, vigorous animals with many different breeding populations within a single species. They can be considered no longer as separate populations comprising single restricted species, but rather as aggressive forms which move in rapidly to fill all available ecological niches.

CYNORTA C. L. KOCH

Cosmetus PERTY, 1833, Delectus animalium articulatorum, fasc. 3, pp. 203, 308 (in part). GERVAIS, 1844, *in* Walckenaer, C. A., and F. L. P. Gervais, Histoire naturelle des insectes, aptères, vol. 3, p. 115 (in part).

Cynorta C. L. KOCH, 1839, Ubers Arachniden, vol. 2, p. 2; 1839, *in* Hahn, C. W., and C. L. Koch, Die Arachniden, vol. 7, pp. 100, 102. SIMON, 1879, Ann. Soc. Ent. Belgique, vol. 22, p. 195. BANKS, 1893, Trans. Amer. Ent. Soc., vol. 20, p. 150; 1898, Jour. New York Ent. Soc., vol. 6, p. 181; 1901, Amer. Nat., vol. 35, p. 671 (in part); 1901, Proc. U. S. Natl. Mus., vol. 24, p. 226; 1904, Proc. California Acad. Sci., vol. 3, p.3 63; 1905, Proc. Ent. Soc. Washington, vol. 7, p. 22. CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 557. BANKS, 1909, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, p. 225; 1909, Rept. Exp. Sta. Cuba, vol. 2, 169; 1911, Pomona Jour. Ent., vol. 3, p. 415. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 31; 1923, Die Weberknechte der Erde, p. 310; 1926, Abhandl. Naturwiss. Ver. Bremen, vol. 26, p. 555; 1928, Abhandl. Naturwiss. Ver. Bremen, vol. 26, p. 570. CHAMBERLIN, 1925, Bull. Mus. Comp. Zool., vol. 67, p. 241.

Flirtea C. L. KOCH, 1839, Ubers Arachniden, vol. 2, p. 20; 1839, *in* Hahn, C. W., and C. L. Koch, Die Arachniden, vol. 7, p. 99 (in part). ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 73; 1923, Die Weberknechte der Erde, p. 345. (New synonymy.)

Erginoides CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 553. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 27; 1923, Die Weberknechte der Erde, p. 307. (New synonymy.)

Erginus (*non* Jeffreys, 1877) CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 553 (in part). BANKS, 1904, Bull. New York Mus., vol. 22, p. 189; 1909, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, p. 229. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 66. (New synonymy.)

Metavonones CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 553. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 27; 1923, Die Weberknechte der Erde, p. 308. MELLO LEITAO, 1925, Arch. Mus. Nac. Rio de Janeiro, vol. 24, p. 109 (in part). (New synonymy.)

Erginulus ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 78; 1923, Die Weberknechte der Erde, p. 350. (New synonymy.)

Eucynorta ROEWER, 1912, Arch. Naturgesch., vol. 78. sect. A, no. 10, p. 54; 1923, Die Weberknechte der Erde, p. 328; 1926, Abhandl. Naturwiss. Ver. Bremen, vol. 26, p. 580. (New synonymy.)

Eucynortella ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 52; 1923, Die Weberknechte der Erde, p. 326. (New synonymy.)

Eucynortoides ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 64; 1916, Arch. Naturgesch., vol. 81, sect. A, no. 12, p. 9; 1923, Die Weberknechte der Erde, p. 357. (New synonymy.)

Eucynortula ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 58; 1923, Die Weberknechte der Erde, p. 332. (New synonymy.)

Euerginus ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 84; 1923, Die Weberknechte der Erde, p. 359. (New synonymy.)

Metacynortoides ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 65; 1923, Die Weberknechte der Erde, p. 338. (New synonymy.)

Cynortoides ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 61; 1923, Die Weberknechte der Erde, p. 335. (New synonymy.)

Neocynortoides ROEWER, 1916, Arch. Naturgesch., vol. 81, sect. A, no. 12, p. 10; 1923, Die Weberknechte der Erde, p. 340. (New synonymy.)

Proërginus ROEWER, 1916, Arch. Naturgesch., vol. 82, sect. A, no. 2, p. 99; 1923, Die Weberknechte der Erde, pp. 387–388. (New synonymy.)

Rhaucus SIMON, 1879, Ann. Soc. Ent. Belgique, vol. 22, p. 213. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 77; 1923, Die Weberknechte der Erde, p. 349. (New synonymy.)

Cynortellana ROEWER, 1923, Die Weberknechte der Erde, p. 321. (New synonymy.)

Paracynorta GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1198, pp. 10 and 11. (New synonymy.)

Acromares GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1163, p. 2. (New synonymy.)

Bivonones GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1163, pp. 2 and 3. (New synonymy.)

Boneta GOODNIGHT AND GOODNIGHT, 1944, Amer. Mus. Novitates, no. 1249, p. 8. (New synonymy.)

Brachylibitia MELLO-LEITAO, 1941, Ann. Acad. Brasileira Sci., vol. 13, no. 3, p. 166. (New synonymy.)

Eugnidia ROEWER, 1947, Senckenbergiana, vol. 28, nos. 1–3, p. 11. (New synonymy.)

Cynortoperna ROEWER, 1947, Senckenbergiana, vol. 28, nos. 1–3, p. 16. (New synonymy.)

Cynortesta ROEWER, 1947, Senckenbergiana, vol. 28, nos. 1–3, p. 24. (New synonymy.)

Erginiperna ROEWER, 1947, Senckenbergiana, vol. 28, nos. 1–3, p. 25. (New synonymy.)

Reimoserius ROEWER, 1947, Senckenbergiana, vol. 28, nos. 1–3, p. 27. (New synonymy.)

Cosmetids with simple, untoothed double claws on the third and fourth tarsi, with but six segments in the first tarsus. Distitarsi of both first and second tarsi with three segments. Dorsum with

five areas, variously armed with tubercles and spines, without a median large spine on the third area.

GENOTYPE: *Cynorta conspersa* (Perty).

Cynorta apicalis (Cambridge)

Figures 23, 24

Meterginus apicalis CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, pp. 569, 570, pl. 53, figs. 15, 15a. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 106; 1923, Die Weberknechte der Erde, p. 382, fig. 464.

MALE: Total length of body, 5.4 mm. Cephalothorax, 2.2 mm. Width of body at widest portion, 4.8 mm.

	I	II	III	IV
Trochanter	0.6 mm.	0.8 mm.	0.8 mm.	0.9 mm.
Femur	3.0	6.0	4.5	5.1
Patella	1.0	1.2	1.7	1.5
Tibia	2.0	5.0	2.7	3.6
Metatarsus	3.6	5.4	4.7	6.3
Tarsus	2.0	4.5	2.5	3.0
Total	12.2 mm.	22.9 mm.	16.9 mm.	20.4 mm.

Dorsum smooth, a pair of prominent sharp spines on the third area. First area with a pair of granules which are not large enough to be considered tubercles. Each free tergite with a transverse row of small tubercles. Anal operculum also with scattered small tuberculations. Each free sternite with a transverse row of small, hair-tipped granulations. Venter and coxae with scattered hairs, first coxa with a transverse row of tubercles. Dorsally the fourth coxa has a posterior apical spine.

Legs clothed throughout with hairs. Second and third trochanters each with an apical retrolateral tubercle; fourth trochanter with a large spine in a similar position. Femora, patellae, and tibiae of first and second legs with tubercles which are more or less arranged in rows. Third femur heavier, with rows of tubercles on the ventral portion which become spinose at the apical end; patella and tibia somewhat heavier and with tubercles. Fourth femur with a dorsal row of large tubercles on the proximal half and two ventral rows of longer spines on the apical half. The retrolateral row contains eight spines, with the central ones being somewhat longer; the prolateral row has four; patella and tibia with smaller tubercles which are more or less arranged in rows.

Tarsal segments: 6–13–9–10. Distitarsi of both first and second tarsi with three segments.

Palpus: trochanter, 0.8 mm. long; femur, 1.5; patella, 0.9; tibia, 1.4; and tarsus, 1. Total length, 5.6 mm. Palpus characteristically flattened. Femur with a ventral row of teeth.

Chelicera greatly enlarged, with scattered hairs, otherwise smooth.

Entire body and appendages reddish brown. Dorsum with white markings as in figure 24. These white markings are somewhat variable in different individuals.

FEMALE: Total length of body, 5.8 mm. Cephalothorax, 1.8 mm. Width of body at widest portion, 4.5 mm.

Similar appearance to the male, but lacking the enlarged chelicerae and the spines of the third and fourth femora.

RECORDS: The Ruins of Palenque, July, 1948, and July 7, 1949 (32 males and females); and Finca El Real, July 1, 1950 (one male). All collected by C. and M. Goodnight.

VARIATIONS: In a total of 32 animals studied, but one male had seven segments in the first tarsus. The remaining animals had six. For this reason, six must be considered typical of the species; hence it is placed in the genus *Cynorta* as here defined.

Cambridge in his study had but a single specimen upon which to base his description. His specimen had seven segments in the first tarsus; thus he placed it in his genus *Meterginus*. The animals in the present study agreed with his in such details as the spination of the fourth femur and the dorsal color pattern, so we feel justified in our identification.

Cynorta arborescens, new species

Figures 21, 22

MALE HOLOTYPE: Total length of body, 4.8 mm. Cephalothorax, 1.9 mm. Width of body at widest portion, 4.3 mm.

	I	II	III	IV
Trochanter	0.7 mm.	0.7 mm.	0.8 mm.	0.9 mm.
Femur	3.8	9.1	6.5	8.9
Patella	1.0	1.5	1.3	1.8
Tibia	2.3	7.5	3.4	5.0
Metatarsus	3.9	9.5	6.4	9.2
Tarsus	2.0	5.1	3.0	3.6
Total	13.7 mm.	33.4 mm.	21.4 mm.	29.4 mm.

Dorsum smooth, with a pair of small tubercles on the first area and a pair of large spines on the third area. Free tergites and anal operculum smooth. Free sternites clothed only with hairs. Coxae with scattered hairs, a row of small tubercles across the ventral portion of the first coxa.

Legs clothed throughout with hairs. A row of spinose tubercles on the retrolateral margin of the fourth patella, femur straight, distal portion of tibia somewhat enlarged, with a retrolateral row of tubercles which are enlarged into spines at the distal portion, metatarsus with a retrolateral row of tubercles. First, second, and third legs without such tubercles or spines. Tarsal segments: 6–15–9–10. Distitarsi of both first and second tarsi with three segments.

Palpus: trochanter, 0.7 mm. long; femur, 0.9; patella, 0.9; tibia, 1.3; and tarsus, 0.7. Total length, 4.5 mm. Palpus characteristically flattened, with a ventral row of teeth on the femur.

Chelicera smooth, somewhat enlarged.

Dorsum dark reddish brown, with a broad, irregular, white patch posterior to the eye tubercle which extends to the third area. Irregular dark brown patches show through this white marking. This is particularly evident on the first area where the median paired tubercles are surrounded by a brown circle. A narrow band of white is between the spines of the third area, and a broad patch of white is on the posterior part of the third, fourth, and fifth areas. Free tergites without lighter markings. Venter, coxae, chelicera, and palpus dark brown, with some lighter mottlings. Legs much lighter, being light reddish brown with gray mottlings.

FEMALE: Total length of body, 5.8 mm. Cephalothorax, 1.8 mm. Width of body at widest portion, 4.3 mm.

Similar in appearance to the male, but without the spinose tubercles of the fourth leg and with the chelicerae much reduced in size. A small patch of white was present on the first free tergite of both females.

TYPE LOCALITY: Pichucalco, July 17, 1947. The one male holotype and two female paratypes were found on the trunk of a tree among some vines, about 6 feet above the ground. Perhaps this species is an arboreal one.

RELATIONSHIPS: *Cynorta arborescens* shows very close affinities to *C. formosa* Goodnight and Goodnight from Tamazunchale, San Luis Potosi. It differs in having the white pattern extending onto

the first area of the abdomen and some white on the second area. Also the male of the present species has a slight enlargement on the distal portion of the fourth tibia. Possibly these are just differences in races, but without collections from intervening areas, it is impossible to be certain.

Cynorta casa, new species

Figures 25, 26

MALE HOLOTYPE: Total length of body, 5.9 mm. Cephalothorax, 2 mm. Width of body at widest portion, 4.3 mm.

	I	II	III	IV
Trochanter	0.5 mm.	0.6 mm.	0.6 mm.	0.8 mm.
Femur	1.9	3.0	2.3	3.1
Patella	0.7	1.1	0.9	1.4
Tibia	1.1	2.4	1.5	2.6
Metatarsus	1.6	2.7	1.9	3.0
Tarsus	1.4	2.5	1.5	1.7
Total	7.2 mm.	12.3 mm.	8.7 mm.	12.6 mm.

Dorsum finely granulate, first and third areas each with a pair of very low tubercles, a few specimens with paired low tubercles on the second area. Fifth area and each free tergite with a transverse row of very small tubercles. Venter and coxae smooth; anal operculum with a few very small tubercles. Ventral surface of first coxa with a ventral row of small tubercles.

Legs clothed throughout with hairs. Trochanters with scattered tuberculations. Third and fourth trochanters each with a retrolateral spine at the distal margin. This spine is quite large on the fourth trochanter. Femur, patella, and tibia of third leg slightly enlarged and with small tubercles arranged more or less in rows, particularly on the femur. Fourth femur enlarged, somewhat curved and clavate shaped. Dorsally and ventrally the fourth femur has numerous tubercles which are more or less arranged in rows, with a retrolateral row of from 15 to 20 spines. These spines are somewhat coalesced at their bases. Occasionally some of the spines are bifid. Prolaterally the femur has a row of smaller spines. The fourth patella and tibia are heavy and have numerous enlarged tubercles. Basitarsus of first tarsus enlarged. Tarsal segments: 6–9–6–7. Distitarsi of both first and second tarsi with three segments.

Palpus: trochanter, 0.7 mm. long; femur, 1.1; patella, 0.8;

tibia, 0.9; and tarsus, 0.6. Total length, 4.1 mm. Palpus characteristically flattened, the femur with a ventral row of teeth.

Chelicera very slightly enlarged. Proximal segment with scattered tuberculations on the dorsal portion, distal segment smooth.

Body and appendages dark brown, mottled with lighter. In some specimens, the dorsum is darker than in others. Femora of legs appear to be almost banded in some specimens. Dorsum with fine broken white lines which vaguely outline the first three areas and indicate the median line. A few white pencillings are sometimes present between the cephalothorax and abdomen. The pattern as shown in figure 25 is typical, but there are variations. Some specimens have much more white than others, and a few lack white markings entirely. Often there is a lighter spot surrounding each tubercle.

FEMALE: Total length of body, 5.9 mm. Cephalothorax, 2 mm. Width of body at widest portion, 4.3 mm.

Similar in appearance to male except that the spines of the fourth leg are lacking and the basitarsus of the first tarsus is not enlarged.

TYPE LOCALITY: Male holotype and male and female paratypes from San Cristobal Las Casas, July 12, 1950 (three males, four females). Other material was collected at the same locality July 14 and 15, 1950 (five males, five females), and at Cruz Quemada, July 24, 1950 (16 females, nine males). All collected by C. and M. Goodnight.

RELATIONSHIPS: This species did not appear to be very closely related to any other known forms of this genus.

VARIATIONS: Among those animals collected at Cruz Quemada, some had seven rather than six segments in the third tarsus. The majority, however, had six.

Cynorta churubusci, new species

Figure 27

MALE HOLOTYPE: Total length of body, 4.2 mm. Cephalothorax, 1.6 mm. Width of body at widest portion, 3.2 mm.

	I	II	III	IV
Trochanter	0.5 mm.	0.5 mm.	0.6 mm.	0.7 mm.
Femur	2.4	4.6	3.4	4.6
Patella	0.9	1.1	1.1	1.2
Tibia	1.7	3.5	2.3	3.0
Metatarsus	2.7	5.5	3.4	4.4
Tarsus	1.8	4.2	2.1	2.6
Total	10.0 mm.	19.4 mm.	12.9 mm.	16.5 mm.

Dorsum smooth, first area with median paired small tubercles, third with paired spines. Fifth area and free tergites without armature. Anal operculum smooth. Sternites, coxae, and venter clothed with scattered hairs. Ventral portion of the first coxa with a transverse row of low tubercles.

Legs clothed throughout with hairs, otherwise unarmed. Basitarsus of first tarsus not enlarged. Fourth femur straight and unarmed. Tarsal segments: 6–12–7–8. Distitarsi of both first and second tarsi with three segments.

Palpus: trochanter, 0.7 mm. long; femur, 1.2; patella, 0.7; tibia, 1.1; tarsus, 0.4. Total length, 4.1 mm. Palpus characteristically flattened.

Chelicera somewhat enlarged, retrolateral portion with a few tuberculations but otherwise smooth.

Body dark reddish brown, with lighter mottlings. The white pattern as in figure 27. The spines of the third area somewhat lighter, appendages likewise lighter than the dorsum.

FEMALE: Total length of body, 4 mm. Cephalothorax, 1.4 mm. Width of body at widest portion, 3.1 mm.

Similar in appearance to the male

TYPE LOCALITY: Male holotype from Finca Santa Martha, August 1, 1950. Female paratypes from Puerto Madero, August 2, 1950, and from Finca Guatimoc, August 5, 1950. All collections by C. and M. Goodnight.

RELATIONSHIPS: This species is related to *Cynorta nannacornuta* Chamberlin from Barro Colorado Island, Canal Zone. The spines of the third area of these animals, however, are somewhat larger, and there is less white in the color pattern of the dorsum.

Cynorta clavipes (Cambridge)

Figures 28–33

Erginus clavipes CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 566, pl. 53, figs. 8, 8a.

Erginulus clavipes ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 83; 1923, Die Weberknechte der Erde, p. 355.

MALE: Total length of body, 5.3 mm. Cephalothorax, 2.2 mm. Width of body at widest portion, 4.6 mm.

Dorsum finely granulate, with a pair of short spines on the third area. First area with a median pair of granules which are not

	I	II	III	IV
Trochanter	0.6 mm.	0.6 mm.	0.7 mm.	0.7 mm.
Femur	2.3	4.3	3.2	4.2
Patella	0.8	1.1	1.1	1.3
Tibia	1.6	3.1	1.9	2.6
Metatarsus	2.6	4.6	3.4	4.6
Tarsus	1.9	3.1	3.1	2.2
Total	9.8 mm.	16.8 mm.	13.4 mm.	15.6 mm.

elevated into tubercles. A few small tubercles in the median portion of the fourth area. A transverse row of small tubercles across the fifth area and each free tergite. Anal operculum irregularly covered with small tubercles. Free sternites each with a transverse row of small tubercles. Coxae smooth, a ventral row of tubercles on the first one. Fourth coxa with a dorsal apical spur, its surface with many prominent light-colored hairs which are visible from above.

Legs clothed throughout with hairs. A distal retrolateral spine on the third and fourth trochanters. Femora, patellae, and tibiae of third and fourth legs tuberculate. These tubercles are larger on the fourth leg. Fourth femur curved, with several dorsal and lateral rows of tubercles. In the median portion there is a ventral row with about 10 spines, the central spine being the largest. Tarsal segments: 6–10–7–8. Distitarsi of both first and second tarsi with three segments. Basitarsus of first tarsus enlarged.

Palpus: trochanter, 0.8 mm. long; femur, 1.6; patella, 0.8; tibia, 1.3; and tarsus, 0.7. Total length, 5.2 mm. Palpus characteristically flattened, femur with a ventral row of teeth. Entire palpus clothed with hairs.

Chelicera enlarged, dorsal portion of proximal segment tuberculate; distal portion smooth.

Entire body and appendages dark reddish brown, somewhat mottled, without any white markings.

FEMALE: Total length of body, 5.6 mm. Cephalothorax, 1.4 mm. Width of body at widest portion, 4.4 mm.

Similar in appearance to the male, but lacking the spines of the fourth leg and the enlarged chelicera. Also the spines of the third area are reduced in size, and the basitarsus of the first tarsus is not enlarged.

RECORDS: Pichucalco, July 18, 1947 (six males, nine females); Ruins of Palenque, July, 1948 (three males, one female), July, 1949 (one male, one female); Tenosique, Tabasco (one female);

Finca El Real, July 1, 1950 (one female); Finca Monte Libano, July 4, 1950 (one male); and Coban, Guatemala, July, 1947 (three males, three females). All the above collections were by C. and M. Goodnight except the collection at Coban which was made by C. and P. Vaurie.

VARIATIONS: In this long series of specimens, but little variation in tarsal count was observed. The tarsal count varied from 6–11–7–7 to 6–12–7–8, and 6–10–7–7, with the majority having seven segments in the third tarsus and eight in the fourth. Most specimens had no white markings on the dorsum, although a few had traces of white behind the spines of the third area.

The variation in the spination of the fourth femur was extreme. In the collections from Pichucalco which were all obtained in a very small area, one male had extremely heavy spines; others had no spines on the fourth femur, but had a curious swelling on the distal portion of the fourth tibia. The spines of the third area are often reduced and sometimes are only very low tubercles.

Cynorta clavotibialis (Cambridge)

Figures 34–38

Erginus clavotibialis CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 562, pl. 52, figs. 19, 19b.

Euerginus clavotibialis ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 86; 1923, Die Weberknechte der Erde, p. 361, figs. 426, 472a-b.

Erginus cylindrotibialis CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 562, pl. 52, figs. 21, 21b. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 86; 1923, Die Weberknechte der Erde, p. 362, figs. 430–431. (New synonymy.)

Erginus serratotibialis CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 562, pl. 52, figs. 20, 20a. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 86; 1923, Die Weberknechte der Erde, p. 362, figs. 428, 429. (New synonymy.)

Acromares banksi GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1163, p. 2, figs. 9, 10. (New synonymy.)

Acromares roeweri GOODNIGHT AND GOODNIGHT, 1947, Fieldiana: Zool., vol. 32, no. 1, pp. 14–15, fig. 6. (New synonymy.)

MALE: Total length of body, 7.5 mm. Cephalothorax, 2.8 mm. Width of body at widest portion, 6.4 mm.

Dorsum smooth except for a pair of short blunt spines at the anterior portion of the fourth area or the posterior portion of the third. Anal operculum with scattered small tuberculations. Each free sternite with a transverse row of small, hair-tipped

tubercles. Venter and coxae smooth except for a few small hair-tipped tubercles on the surface of the coxae. First coxa with a transverse row of larger tubercles. Third coxa with a few distal teeth at the posterior margin. The anterior lateral region of the fourth coxa with a large blunt tubercle visible from above and with a distal dorsal spine.

	I	II	III	IV
Trochanter	0.7 mm.	0.8 mm.	0.8 mm.	0.9 mm.
Femur	2.5	5.6	4.5	4.8
Patella	1.1	1.4	1.7	1.6
Tibia	2.0	2.9	3.8	3.5
Metatarsus	3.3	5.8	4.3	6.0
Tarsus	2.1	4.0	2.1	2.3
Total	11.7 mm.	21.5 mm.	16.2 mm.	19.1 mm.

Legs clothed throughout with hairs, basal segments of first three with only minute tuberculations. Fourth trochanter with a distal retrolateral spine; femur somewhat curved, heavy, with four rows of tubercles on the ventral portion of the apical half; patella somewhat clavate, a row of several tubercles on the retrolateral margin, the median ones enlarged into spines; tibia much enlarged, with several dorsal rows of tubercles and on either side a lateral row of about 12 long, somewhat curved spines which are more or less coalesced at the base; metatarsus with a retrolateral row of small tubercles. Tarsal segments: 6–9–7–8. Distitarsi of both first and second tarsi with three segments.

Palpus: trochanter, 1 mm. long; femur, 2.3; patella, 1.4; tibia, 1.5; and tarsus, 0.8. Total length, 7 mm. Palpus characteristically flattened. The femur with a ventral row of teeth, the tibia much expanded.

Chelicera enlarged, proximal segment with only a few small tubercles, distal segment smooth. Claws curved medially.

Dorsal scute reddish brown, with scattered white punctations, including some on the eye tubercle and on the free tergites. Irregular white markings present on the lateral margins. These are quite variable, but in some specimens form more or less of an outline around the scute. Venter somewhat lighter reddish brown. Chelicera and fourth leg dark reddish brown, remainder of appendages lighter.

FEMALE: Total length of body, 7.2 mm. Cephalothorax, 3.1 mm. Width of abdomen at widest portion, 5.4 mm.

Similar in appearance to the male, but lacking the enlarged portions of the fourth leg.

RECORDS: Chiapas: Ocosingo, June 24, 1950 (one male, two females); Finca El Real, July 6, 1950 (one male); Pichucalco, July 17, 1947 (one male, two females); Ruins of Palenque, July, 1948 (two males, one female); Finca Tecoja, July 2, 1950 (one female); and Finca Monte Libano, July 5, 1950 (two males). Tabasco: Teapa, July 16, 1947 (one male, three females). Veracruz: Jesus Carranza, July 13, 1947 (seven males, 10 females); Tierra Blanca, July 12, 1947 (one female). Campeche: Lerma, July 26, 1948 (five females); Ciudad del Carmen, July 28, 1948 (eight males, three females). Yucatan: Chichen Itza, July 10, 1948 (one male, one female). Quintana Roo: Touloum, August 12, 1949 (two males); and Oaxaca, July 23, 1909, collected by A. Petrunkevitch. Unless otherwise noted, all collections were made by C. and M. Goodnight.

VARIATIONS: There is a tendency towards a reduction of the amount of white markings along the sides of the dorsum among the specimens from the Yucatan Peninsula. The extreme of this condition was found in the animals from Campeche and Chichen Itza. These appear to have two pairs of spots, one at the lateral portion of the cephalothorax and the other at the lateral posterior portion of the third area. Transitional patterns could be seen among some other animals collected at Campeche. The Yucatan specimens had a row of several smaller spines on the inner margin of the patella of the fourth leg. These spines were present as tubercles in the specimens from other areas. The femora of all specimens had rows of heavy tubercles. In the Yucatan material these tubercles were enlarged into small spines at the apical portion of the inner margin.

DISCUSSION: Cambridge differentiated *C. clavotibialis* from *C. serratotibialis* principally by the difference in the length and the spines of the fourth tibia. After careful study of a long series of specimens from numerous localities, we feel that this difference represents extremes of variation. Typical specimens of each type were found in a single collection from Jesus Carranza, Veracruz, which is very close to the type locality of *C. clavotibialis*. In addition, intermediate forms were found in some of the Yucatan specimens.

Cynorta serratipes (Cambridge)

Figures 45, 46

Erginus serratipes CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 565, pl. 63, figs. 5, 5a.

Erginulus serratipes ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 82; 1923, Die Weberknechte der Erde, p. 352, figs. 401, 402.

MALE: Total length of body, 5.4 mm. Cephalothorax, 2 mm. Width of body at widest portion, 4.3 mm.

	I	II	III	IV
Trochanter	0.6 mm.	0.6 mm.	0.5 mm.	0.6 mm.
Femur	2.4	4.2	3.1	4.0
Patella	0.7	1.0	1.0	1.3
Tibia	1.3	3.2	1.8	3.0
Metatarsus	2.1	4.1	3.1	4.4
Tarsus	1.6	2.5	1.8	2.0
Total	8.7 mm.	15.6 mm.	11.3 mm.	15.3 mm.

Dorsum very finely granulate, a pair of slender spines on the third area, remaining areas and free tergites unarmed but with a few small, hair-tipped granulations. Anal operculum and free sternites smooth except for scattered hair-tipped granulations. These are more or less arranged in rows on the sternites. Coxae with scattered hairs, a row of tubercles arranged transversely on the first coxa.

Legs clothed throughout with scattered hairs, third femur with a row of tubercles on the retrolateral margin. Fourth femur somewhat clavate, with several rows of conspicuous tubercles; basally the dorsal row of tubercles are somewhat larger; a row of large spines also present on the ventral margin. These number from 10 to 12 and are larger in the median portion of the row. Patella and tibia of fourth leg with small tubercles arranged in rows. A posterior distal spine is present on the third and fourth trochanters. Tarsal segments: 6–11–7–7. Distitarsi of both first and second tarsi with three segments.

The entire body reddish brown, with darker brown mottlings. Dorsum with white pencillings as in figure 45. Carapace somewhat lighter.

FEMALE: Total length of body, 5.7 mm. Cephalothorax, 1.8 mm. Width of body at widest portion, 4.5 mm.

Similar in appearance to male, but with the spines of the third area reduced and without the spines of the fourth femur.

RECORDS: Ocosingo, June 24, 1950 (two females), collected by L. Stannard and C. Goodnight; Ruins of Palenque, July, 1948 (one male, one female), collected by C. and M. Goodnight.

Cynorta subserialis (Cambridge)

Figures 39–44

Erginus subserialis CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 564, pl. 53, figs. 2, 2b.

Euerginus subserialis ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 86; 1923, Die Weberknechte der Erde, p. 360.

Erginus tricristatus CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 566, pl. 53, figs. 7, 7a. (New synonymy.)

Erginulus tricristatus ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 83; 1923, Die Weberknechte der Erde, p. 354, figs. 407, 408. (New synonymy.)

Bivonones gertschi GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1163, pp. 2, 4, figs. 14, 15; 1944, Amer. Mus. Novitates, no. 1249, pp. 7, 8, figs. 17, 18. (New synonymy.)

MALE: Dorsum smooth, first and second areas with either one or two pairs of paired tubercles; third area with a pair of spines; fourth without armature; fifth area and each free tergite with a transverse row of small tubercles. Anal operculum with scattered tuberculations; each free sternite with a transverse row of low tubercles. Coxae with scattered hairs, a transverse row of small tuberculations across the ventral surface of the first coxa; fourth with a dorsal apical spine.

Legs clothed throughout with hairs. Third and fourth femora heavier, with the degree of spination on the fourth femur varying within the different subspecies. Tarsal segments: 6–10–7 or 8–8. Distitarsi of both first and second tarsi with three segments.

Chelicera enlarged, smooth except for some tubercles on the retrolateral margin of the proximal segment.

Palpus characteristically flattened.

Body reddish brown, with a diffuse white pattern along the lateral margins, behind the spines of the third area, and in the central area. Frequently with lighter areas around the dorsal tubercles and spines.

FEMALE: Similar to male in appearance but with the chelicera smaller and without the spines of the fourth femur.

DISCUSSION: The members of this species are highly variable in appearance, depending upon the area from which they come. For

this reason, we have recognized three distinct subspecies based on differences in the spination of the fourth femur.

Cynorta subserialis subserialis (Cambridge)

Figures 39, 40, 41

Erginus subserialis Cambridge, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 564, pl. 53, figs. 2, 2b. Banks, 1909, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, p. 229.

Euerginus subserialis Roewer, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 86; 1923, Die Weberknechte der Erde, p. 360.

Bivonones gertschi Goodnight and Goodnight, 1944, Amer. Mus. Novitates, no. 1249, pp. 7, 8, figs. 17, 18.

Male: Total length of body, 6.9 mm. Cephalothorax, 3 mm. Width of body at widest portion, 6.5 mm.

	I	II	III	IV
Trochanter	0.7 mm.	0.7 mm.	0.8 mm.	0.9 mm.
Femur	2.7	4.8	4.0	4.7
Patella	1.0	1.3	1.3	1.6
Tibia	2.0	3.7	2.4	3.6
Metatarsus	3.2	4.9	3.9	5.6
Tarsus	1.9	3.6	1.9	2.2
Total	11.5 mm.	19.0 mm.	14.3 mm.	18.6 mm.

First and second dorsal areas each with two pairs of small tubercles. Third area with paired spines and two lateral small tubercles. Fifth area and each free tergite with a transverse row of small tubercles. Anal operculum tuberculate. Venter and coxae as described above.

Femur of third leg curved, with large tubercles. Tibia of third leg tuberculate. Trochanter of fourth leg with an apical retrolateral spine; femur tuberculate, with tubercles arranged more or less in rows on the dorsal surface, ventral surface with one row of large spines and another row of three to five spines on the proximal region; patella and tibia with enlarged tubercles. Tarsal segments: 6–10–7–8.

Palpus: trochanter, 1 mm. long; femur, 1.9; patella, 1.2; tibia, 1.5; and tarsus, 0.7. Total length, 6.3 mm. Palpus characteristically flattened.

Color pattern as described above.

Female: Total length of body, 8.9 mm. Cephalothorax, 2.5 mm. Width of body at widest portion, 6.4 mm.

Similar in appearance to male, but with the characters different, as mentioned above.

RECORDS: Finca Santa Martha, July 31 and August 1, 1950, collected by C. and M. Goodnight; Puerto Madero, August 2, 1950, also collected by C. and M. Goodnight, numerous specimens were taken from both localities; El Virgel, October, 1939, collected by C. Bolivar and D. Peláez; Huixtla, January 8, 1945, collected by T. Schneirla; and Variedades, Guatemala, August 27, 1947 (10 specimens) collected by C. and P. Vaurie.

VARIATIONS: The fourth femur of the animals from El Virgel and Huixtla had larger spines than did that of the animals from Santa Martha or Puerto Madero. There were two rows of spines, however, so it is possibly wisest to include them in this subspecies, realizing that they actually represent a different population.

Cynorta subserialis gertschi (Goodnight and Goodnight)

Figure 42

Bivonones gertschi GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1163, pp. 2, 4, figs. 14, 15.

MALE: Total length of body, 6.6 mm. Cephalothorax, 2.7 mm. Width of body at widest portion, 6.3 mm.

	I	II	III	IV
Trochanter	0.6 mm.	0.9 mm.	1.3 mm.	1.3 mm.
Femur	3.7	7.2	5.9	5.5
Patella	1.3	1.0	1.6	1.8
Tibia	2.6	5.9	3.7	4.8
Metatarsus	4.2	7.2	5.7	7.8
Tarsus	2.3	—	2.9	—
Total	14.7 mm.	—	21.1 mm.	—

Dorsum nearly identical with that of *C. s. subserialis*, but somewhat lighter and with the spines of the third area larger. There are also more white pencillings in the central area.

Palpus: trochanter, 0.6 mm. long; femur, 2.1; patella, 1.3; tibia, 2.1; and tarsus, 1.1. Total length, 7.2 mm. Palpus characteristically flattened.

The spines of the femur of the fourth leg are much reduced in this subspecies. The outer ventral row is visible only as very small tubercles, and the inner row is also much smaller.

TYPE LOCALITY: Male holotype and immature paratype from Tonalá, July, 1909, collected by A. Petrunkevitch.

Cynorta subserialis tricristatus (Cambridge)

Figures 43, 44

Erginus tricristatus CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 566, pl. 53, figs. 7, 7a.

Erginulus tricristatus ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 83; 1923, Die Weberknechte der Erde, p. 354, figs. 407–408.

MALE: Total length of body, 6 mm. Cephalothorax, 2.4 mm. Width of body at widest portion, 5.1 mm.

	I	II	III	IV
Trochanter	0.7 mm.	0.8 mm.	0.8 mm.	1.3 mm.
Femur	3.2	6.0	4.6	4.8
Patella	1.0	1.2	1.2	1.3
Tibia	2.4	4.6	2.4	4.2
Metatarsus	3.6	5.4	4.5	6.3
Tarsus	1.8	3.6	2.4	3.0
Total	12.7 mm.	21.6 mm.	15.9 mm.	20.9 mm.

First and second dorsal areas each with a pair of small tubercles. Third area with large paired spines; fifth area and each free tergite with a transverse row of small tubercles. Anal operculum tuberculate, venter and coxae as described above.

Femur of third leg with many large tubercles. A ventral row of small spines, with the distal ones becoming somewhat larger, is also present on this segment. The femur of the fourth leg is tuberculate, with three rows of large spines. On the retrolateral margin there is a row of eight large spines; on the prolateral margin there is a row of eight or nine large spines which are curved at the distal ends so as to form hooks. Occasionally the spines are bifid; otherwise they are separated at the base. A row of five long spines is present on the median portion of the ventral surface, and there is a distal spine on the ventral surface. Third patella and tibia with small tubercles, but fourth patella and tibia with heavy tubercles arranged in rows. Tarsal segments: 6–9–8–9.

Palpus: trochanter, 0.8 mm. long; femur, 2.2; patella, 1.2; tibia, 2; and tarsus, 1.1. Total length, 7.3 mm. Palpus typically flattened.

Chelicera slightly enlarged, as described above.

Dorsal color pattern as in figure 43.

RECORDS: Finca Guatimoc, August 3, 5, and 8, 1950, and Cacaohuatan, August 9, 1950. The numerous specimens from these two localities were collected by C. and M. Goodnight. The

highest altitude at which these animals were found was 3200 feet; above that point, they disappeared from the fauna.

PAECILAEMA C. L. KOCH

Cosmetus PERTY, 1833, Delectus animalium articulatorum, fasc. 3, pp. 303, 304 (in part). C. L. KOCH, 1839, *in* Hahn, C. W., and C. L. Koch, Die Arachniden, vol. 7, pp. 109–111. GERVAIS, 1844, *in* Walckenaer, C. A., and F. L. P. Gervais, Histoire naturelle des insectes, aptères, vol. 3, p. 114. HOLMBERG, 1878, El Naturalista Argentino, vol. 1, p. 74. SIMON, 1879, Ann. Soc. Ent. Belgique, vol. 22, p. 191; 1880, Ann. Soc. Ent. Belgique, vol. 23, p. 101. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 100; 1923, Die Weberknechte der Erde, p. 376.

Flirtea (in part) plus *Paecilaema* C. L. KOCH, 1839, Ubers Arachniden, vol. 2, pp. 20, 21; 1839, *in* Hahn, C. W., and C. L. Koch, Die Arachniden, vol. 7, pp. 97, 104. ROEWER, 1923, Die Weberknechte der Erde, p. 364.

Poecilaema L. AGASSIZ, 1846, Nomenclator zoologicus, Arachnida, p. 11. Plus *Cynorta* SIMON, 1879, Ann. Soc. Ent. Belgique, vol. 22, pp. 191, 200 (in part); 1880, Ann. Soc. Ent. Belgique, vol. 23, p. 102. CANESTRINA, 1888, Atti Accad. Veneto-Trentino-Istriana, Padua, vol. 11, p. 106. CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 471. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 87; 1915, Arch. Naturgesch., vol. 82, sect. A, no. 2, p. 101.

Ortonio WOOD, 1869, Trans. Amer. Phil. Soc., vol. 13, no. 2, p. 438. (New synonymy.)

Erginus SIMON, 1879, Ann. Soc. Ent. Belgique, vol. 22, p. 207, 208 (in part). (New synonymy.)

Meterginus CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 568. BANKS, 1909, Proc. Acad. Nat. Sci., Philadelphia, vol. 61, p. 229 (in part). ROEWER, 1915, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 103; Die Weberknechte der Erde, p. 379. (New synonymy.)

Parahaucus plus *Meterginus* (in part) CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, pp. 569, 572. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 101; 1912, Mém. Soc. Sci. Nat. Neuchâtel, vol. 5, pp. 142–143; 1923, Die Weberknechte der Erde, p. 378. (New synonymy.)

Meterginulus ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 110; 1923, Die Weberknechte der Erde, p. 385. (New synonymy.)

Paecilaemula ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 100; 1915, Arch. Naturgesch., vol. 81, sect. A, no. 3, p. 125; 1916, Arch. Naturgesch., vol. 82, sect. A, no. 2, p. 104; 1923, Die Weberknechte der Erde, p. 374. (New synonymy.)

Meterginoides ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 102; 1923, Die Weberknechte der Erde, p. 379. (New synonymy.)

Eupaecilaema ROEWER, 1916, Arch. Naturgesch., vol. 82, sect. A, no. 2, p. 105; 1923, Die Weberknechte der Erde, p. 376. (New synonymy.)

Paecilaemella ROEWER, 1925, Boll. Mus. Zool. Anat. Comp. Torino, new ser., vol. 40, p. 34; 1928, Abhandl. Naturwiss. Ver. Bremen, vol. 26, p. 626. (New synonymy.)

Cosmetellus ROEWER, 1928, Abhandl. Naturwiss. Ver. Bremen, vol. 26, p. 627. (New synonymy.)

Zarax Sørensen, 1932, K. Danske Vidensk. Selsk. Skr., vol. 29, p. 322 (in part). (New synonymy.)

Parahauculus Roewer, 1933, Ann. Naturhist. Mus. Wien, vol. 46, p. 291. (New synonymy.)

Soaresella Goodnight and Goodnight, 1947, Amer. Mus. Novitates, no. 1340, p. 10. (New synonymy.)

Zaraxes Roewer, 1947, Senckenbergiana, vol. 28, nos. 1–3, p. 32 (New synonymy.)

Cosmetiplus Roewer, 1947, Senckenbergiana, vol. 28, nos. 1–3, p. 31. (New synonymy.)

Cosmetids with simple untoothed claws on the third and fourth legs, with more than six segments in the tarsus of the first leg. Distitarsi of both first and second tarsi with three segments. Dorsum with five areas, variously armed with tubercles and spines. Secondary sexual characteristics of the male usually present as increased spination of the femur of the fourth leg.

Genotype: *Paecilaema U-flavum* (Perty).

Paecilaema albonotatum, new species

Figures 47, 48

Male Holotype: Total length of body, 4.3 mm. Cephalothorax, 1.6 mm. Width of body at widest portion, 3.7 mm.

	I	II	III	IV
Trochanter	0.4 mm.	0.5 mm.	0.6 mm.	0.8 mm.
Femur	3.0	6.5	3.0	5.3
Patella	0.6	1.0	0.9	1.2
Tibia	1.9	5.0	2.4	3.0
Metatarsus	3.2	6.6	4.5	6.8
Tarsus	2.2	3.9	2.4	3.0
Total	11.3 mm.	23.5 mm.	13.8 mm.	20.1 mm.

Dorsum smooth, a pair of very small tubercles on the fifth area and a pair of large acute spines on the third. Each free tergite with a transverse row of tubercles which are somewhat larger on the lateral portion of the third free tergite. Anal operculum with scattered hairs and small tubercles. Each free sternite with a transverse row of very small, hair-tipped tubercles. Venter and coxae smooth except for scattered hairs. First coxa with a transverse row of hair-tipped tubercles; third with a few lateral teeth at the apical portion; fourth with a few larger, hair-tipped tubercles on the lateral portion and with a distal apical spine.

Legs clothed throughout with hairs. Trochanters with scat-

tered tuberculations, fourth with an apical retrolateral spine. First and second femora with a few small tubercles, third with hair-tipped tubercles arranged more or less in rows, fourth femur almost straight, with a dorsal double row of small, hair-tipped tubercles. In addition, the fourth femur has a retrolateral row of spines on the proximal half which continue as tubercles on the distal half. There are about 16 spines in the proximal series. Prolateral margin of fourth femur with a row of small, hair-tipped tubercles. Third patella with a few tubercles, fourth also with some tubercles. Tarsal segments: 7–15–7–8, variable to 7–15–8–9. Distitarsi of both first and second tarsi with three segments.

Palpus: trochanter, 0.3 mm. long; femur, 1.8; patella, 0.8; tibia, 1.7; and tarsus, 0.6. Total length, 4.2 mm. Palpus characteristically flattened, clothed throughout with hairs, femur with a ventral row of teeth.

Chelicera much enlarged, smooth except for a few small tubercles on the proximal segment.

Entire body and appendages dark reddish brown, with a few lighter mottlings. Dorsum very dark, with a series of white markings as in figure 48. These white markings stand out vividly against the dark background.

FEMALE: Total length of body, 5 mm. Cephalothorax, 1.8 mm. Width of body at widest portion, 3.8 mm.

Similar in appearance to the male, but lacking the enlarged chelicera and the spines of the fourth femur.

TYPE LOCALITY: Male holotype and male and female paratypes from the Ruins of Palenque, July, 1948, and July, 1949. Additional specimens from Pichucalco, July 17, 1947, and from Baños de Azufre, August 8, 1948. All collections by C. and M. Goodnight.

RELATIONSHIPS: *Paecilaema albonotatum* is related to *P. basalis* (Cambridge). From Cambridge's description, it appears that the dorsal color pattern and leg spination are both distinctly different in this new species.

Paecilaema bilineatum, new species

Figures 49, 50

MALE HOLOTYPE: Total length of body, 6 mm. Cephalothorax, 2.3 mm. Width of body at widest portion, 5.3 mm.

Dorsum smooth, paired tubercles on the first area, large

paired spines on the third. Fifth area and each free tergite with a transverse row of small tubercles. Anal operculum with scattered tubercles. Each free sternite with a transverse row of small tubercles. Venter and coxae clothed with hairs and scattered granulations. Ventral surface of first coxa with a transverse row of tubercles; third coxa with a few teeth on the anterior and posterior margins of the distal portion.

	I	II	III	IV
Trochanter	0.7 mm.	0.7 mm.	0.7 mm.	0.9 mm.
Femur	3.9	8.6	6.0	8.4
Patella	0.9	1.3	1.4	1.9
Tibia	2.1	6.4	3.4	4.8
Metatarsus	4.4	8.5	6.0	8.8
Tarsus	2.5	4.8	3.0	3.7
Total	14.5 mm.	30.3 mm.	20.5 mm.	28.5 mm.

Legs clothed throughout with hairs. Femora straight, with but a few small tuberculations, otherwise quite smooth with the exception of the fourth. The fourth trochanter with a retrolateral apical spine, femur with two rows of spines on the proximal third. Both rows are located on the retrolateral surface, with the dorsal row composed of smaller spines and the ventral row composed of larger ones, remainder of segment tuberculate. Tarsal segments: 7–13–8–9. Distitarsi of both first and second tarsi with three segments. Basitarsus of first tarsus slightly enlarged.

Palpus: trochanter, 0.1 mm. long; femur, 2; patella, 1; tibia, 1.8,; and tarsus, 0.8. Total length 5.7 mm. Palpus characteristically flattened, a ventral row of teeth on the femur.

Chelicera enlarged, proximal segment with tuberculations. A row of spinose tuberculations on the retrolateral margin of the proximal segment.

Body and appendages dark reddish brown, mottled with lighter brown, particularly on the appendages. The tubercles of the first area white; dorsum with intricate white pattern as outlined in figure 50.

FEMALE: Total length of body, 6 mm. Cephalothorax, 2.2 mm. Width of body at widest portion, 5.3 mm.

Similar in appearance to the male, but with the chelicera reduced in size and lacking the spines of the fourth leg.

TYPE LOCALITY: Male holotype and male and female paratypes from Finca Guatimoc, August 7, 1950. Other specimens from the

same locality, August 12, 1950. All collections were made between 3300 and 5000 feet by C. and M. Goodnight.

RELATIONSHIPS: The distinctive dorsal color pattern and leg spination differentiate this species from others of the genus *Paecilaema*.

Paecilaema rastellifer (Cambridge)

Figures 51, 52

Paecilaema rastellifer CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 571, pl. 53, figs. 17, 17b.

Meterginulus rastellifer ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 110; 1923, Die Weberknechte der Erde, p. 386, figs. 473, 474a, 474b.

MALE: Total length of body, 9 mm. Cephalothorax, 3.2 mm. Width of body at widest portion, 6.6 mm.

	I	II	III	IV
Trochanter	0.9 mm.	1.1 mm.	1.0 mm.	1.2 mm.
Femur	4.0	7.2	5.8	7.3
Patella	1.4	1.8	1.8	1.7
Tibia	3.0	5.4	3.6	5.4
Metatarsus	4.6	6.8	5.8	7.6
Tarsus	2.6	5.0	3.0	3.6
Total	16.5 mm.	27.3 mm.	21.0 mm.	26.8 mm.

Dorsal scute smooth, a pair of very tiny tubercles on the first area and a pair of prominent spines on the third. Each free tergite and sternite with a transverse row of a few small tubercles. Anal operculum with a few scattered tubercles. Venter and coxae clothed with scattered hairs and a few small tubercles. A transverse row of large, hair-tipped tubercles across the first coxa. An anterior and posterior row of teeth at the distal portion of the third coxa; fourth with a dorsal apical spine.

Legs clothed throughout with hairs. First and second femora with tubercles which are arranged more or less in rows. Third leg with the trochanter possessing an apical spine on the retrolateral margin; the femur somewhat clavate and with rows of tubercles which are somewhat enlarged at the distal portion; and the tibia clavate, with two ventral rows of enlarged tubercles. Fourth leg having the trochanter with a large distal spine on the retrolateral margin; the femur clavate, curved, very tuberculate, dorsally with a row of large blunt tubercles. On the retrolateral margin of the fourth femur is a row of 14 large spines, the basal two of which are separate but the remaining ones more or less

coalesced at the base; the prolateral margin has a row of six or seven large spines at the distal third. Fourth patella with scattered large tuberculations; fourth tibia clavate and with many tubercles arranged in rows. Tarsal segments: 8–13–9–10. Distitarsi of both first and second tarsi with three segments.

Palpus: trochanter, 1.4 mm. long; femur, 2.5; patella, 1.5; tibia, 2.4; and tarsus, 0.8. Total length, 8.6 mm. Palpus characteristically flattened, with a row of teeth on the ventral margin of the femur.

Chelicera enlarged, proximal segment with spinose tubercles on the dorsal surface. Distal segment clothed throughout with hairs, but otherwise smooth.

Body reddish brown, mottled with darker color. Dorsum with yellowish white markings as in figure 52. Appendages somewhat lighter in color.

FEMALE: Total length of body, 7.8 mm. Cephalothorax, 2.8 mm. Width of body at widest portion, 6.6 mm.

Identical in appearance with the male, but lacking the spination of the third and fourth legs and the enlargement of the chelicera.

RECORD: Cruz Quemada, July 24, 1950 (two males, one female, one immature). Collected by C. and M. Goodnight.

VONONES SIMON

Gonyleptes SAY, 1821, Jour. Acad. Nat. Sci., Philadelphia, vol. 2, p. 68. WOOD, 1870, Proc. Essex Inst., vol. 6, p. 37.

Vonones SIMON, 1879, Ann. Soc. Ent. Belgique, vol. 22, p. 212. BANKS, 1909, Proc. Acad. Nat. Sci., Philadelphia, vol. 61, p. 228; 1909, Rept. Exp. Sta. Cuba, vol. 2, p. 170. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 22; 1923, Die Weberknechte der Erde, p. 302.

Libitia SIMON, 1879, Ann. Soc. Ent. Belgique, vol. 22, p. 216. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 11; 1923, Die Weberknechte der Erde, p. 293. (New synonymy.)

Cosmetus GERVAIS, 1844, *in* Walckenaer, C. A., and F. L. P. Gervais, Histoire naturelle des insectes, aptères, vol. 3, p. 117 (in part).

Cynorta WEED, 1893, Trans. Amer. Ent. Soc., vol. 20, p. 295 (in part). BANKS, 1893, Trans. Amer. Ent. Soc., vol. 20, p. 150; 1901, Amer. Nat., vol. 35, p. 671; 1904, Proc. California Acad. Sci., ser. 3, vol. 3, p. 363; 1911, Pomona Jour. Ent., vol. 3, p. 415. SIMON, 1879, Ann. Soc. Ent. Belgique, vol. 22, p. 200.

Erginus BANKS, 1898, Jour. New York Ent. Soc., vol. 6, p. 181 (in part). (New synonymy.)

Metacynorta CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 554. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 23; 1923, Die Weberknechte der Erde, p. 304. (New synonymy.)

Paravonones CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol.

2, p. 550. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 19; 1923, Die Weberknechte der Erde, p. 299. (New synonymy.)

Holovonones ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 21; 1923, Die Weberknechte der Erde, p. 301. (New synonymy.)

Heterovonones ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 21; 1923, Die Weberknechte der Erde, p. 302. (New synonymy.)

Libitiodes ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 14; 1923, Die Weberknechte der Erde, p. 296; 1928, Abhandl. Ver. Naturwiss. Bremen, vol. 26, p. 553. (New synonymy.)

Kevonones CHAMBERLIN, 1925, Bull. Mus. Comp. Zool., vol. 68, no. 4, p. 240. ROEWER, 1928, Abhandl. Naturwiss. Ver. Bremen, vol. 26, p. 612. (New synonymy.)

Gueroma GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1211, p. 3. (New synonymy.)

Michella GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1211, p. 5. (New synonymy.)

Ornotus GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1211, p. 6. (New synonymy.)

Poala GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1211, p. 6. (New synonymy.)

Ambatoiella MELLO-LEITAO, 1943, Comm. Zool. Mus. Montevideo, vol. 1, no. 5, p. 8. (New synonymy.)

Calicynorta GOODNIGHT AND GOODNIGHT, 1943, Amer. Midland Nat., vol. 29, no. 3, p. 643. (New synonymy.)

Tecavonones GOODNIGHT AND GOODNIGHT, 1944, Ciencia, vol. 5, nos. 4–5, p. 109. (New synonymy.)

Disvonones GOODNIGHT AND GOODNIGHT, 1944, Ciencia, vol. 5, nos. 4–5, p. 106. (New synonymy.)

Libitiosoma ROEWER, 1947, Senckenbergiana, vol. 28, nos. 1–3, p. 8. (New synonymy.)

Denticynorta ROEWER, 1947, Senckenbergiana, vol. 28, nos. 1–3, p. 9. (New synonymy.)

Vononula ROEWER, 1947, Senckenbergiana, vol. 28, nos. 1–3, p. 9. (New synonymy.)

Vononesta ROEWER, 1947, Senckenbergiana, vol. 28, nos. 1–3, p. 10 (New synonymy.)

Cosmetids with simple untoothed double claws on the third and fourth legs, with five segments in the first tarsus. Distitarsi of both first and second tarsi with three segments. Dorsum with five areas, variously armed with tubercles and spines, without a large median spine on the third area.

GENOTYPE: *Vonones octotuberculatus* Simon.

Vonones circumlineatus, new species

Figure 53

MALE HOLOTYPE: Total length of body, 4.2 mm. Cephalothorax, 1.8 mm. Width of body at widest portion, 3.8 mm.

	I	II	III	IV
Trochanter	0.5 mm.	0.5 mm.	0.5 mm.	0.6 mm.
Femur	2.0	4.2	2.9	3.8
Patella	0.8	1.0	0.8	1.2
Tibia	1.4	2.8	1.9	2.5
Metatarsus	2.1	3.6	2.9	4.4
Tarsus	1.5	3.1	1.7	1.9
Total	8.3 mm.	15.2 mm.	10.7 mm.	14.4 mm.

Dorsum finely granulate, a pair of tubercles on the first area, a pair of spines on the third, second area with a transverse row of six very small tuberculations in the median portion. Fifth area and each free tergite and free sternite with a transverse row of very small tuberculations. Anal operculum with scattered tuberculations. Venter and coxae clothed throughout with hairs and granulations. Ventral surface of the first coxa with a transverse row of small tubercles, fourth coxa with a dorsal apical spine.

Legs having the trochanters smooth; the femora, patellae, and tibiae with small tubercles arranged more or less in rows. These tubercles are somewhat larger on the segments of the fourth leg; fourth femur somewhat curved. Basitarsus of first tarsus slightly enlarged. Tarsal segments: 5–10–6–7. Distitarsi of both first and second tarsi with three segments.

Palpus: trochanter, 0.5 mm. long; femur, 1; patella, 0.7; tibia, 0.9; and tarsus, 0.5. Total length, 3.6 mm. Palpus characteristically flattened.

Chelicera not enlarged, smooth except for a few granulations on the dorsal surface of the proximal segment.

Body dark reddish brown, dorsum with an intricate white pattern as indicated in figure 53. White spots on the free tergites.

FEMALE: Total length of body, 4.7 mm. Cephalothorax, 1.5 mm. Width of body at widest portion, 3.8 mm.

Similar in appearance to male.

TYPE LOCALITY: Male holotype and male and female paratypes from Finca Guatimoc, August 3, 1950 (two males, three females). Other specimens from Finca Santa Martha, August 1, 1950. Both collections by C. and M. Goodnight.

RELATIONSHIPS: *Vonones circumlineatus* differs from the other described species of this genus in the dorsal color pattern.

VARIATIONS: There was some variation in the tarsal count among the different specimens. Some had the following: 5–10–6–6.

Vonones compressus (Cambridge)

Figures 54, 55

Paravonones compressus CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 552, pl. 52, figs. 4, 4a.

Holovonones compressus ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 21; 1923, Die Weberknechte der Erde, p. 301.

Disvonones albilineatus GOODNIGHT AND GOODNIGHT, 1944, Ciencia, vol. 5, nos. 4–5, pp. 106–107, figs. 2, 4. (New synonymy.)

Disvonones albiornatus GOODNIGHT AND GOODNIGHT, 1944, Ciencia, vol. 5, nos. 4–5, pp. 107–108, fig. 3. (New synonymy.)

Disvonones bilineata GOODNIGHT AND GOODNIGHT, 1944, Ciencia, vol. 5, nos. 4–5, pp. 108–109, fig. 1. (New synonymy.)

Tecavonones clavipes GOODNIGHT AND GOODNIGHT, 1944, Ciencia, vol. 5, nos. 4–5, p. 109, figs. 5, 6. (New synonymy.)

MALE: Total length of body, 3.8 mm. Cephalothorax, 1.5 mm. Width of body at widest portion, 3 mm.

	I	II	III	IV
Trochanter	0.4 mm.	0.4 mm.	0.4 mm.	0.5 mm.
Femur	1.4	2.3	1.7	2.0
Patella	0.5	0.8	0.7	0.9
Tibia	1.0	1.9	1.2	1.6
Metatarsus	1.3	2.2	1.8	2.5
Tarsus	1.1	1.9	1.2	1.2
Total	5.7 mm.	9.5 mm.	7.0 mm.	8.7 mm.

Dorsum smooth, eye tubercle with a small tuberculation over each carina, otherwise smooth. Paired tubercles present on the first four areas. Fifth area and each free tergite and free sternite with a transverse row of tubercles. Anal operculum with scattered tubercles. Coxae smooth, first with a ventral row of teeth, fourth with an anterolateral projection.

Legs clothed with scattered hairs, fourth trochanter with a dorsal and ventral apical spine. The ventral spine is quite large. Fourth femur flattened and somewhat enlarged, with a retrolateral row of tuberculations which are larger at the proximal portion. Tarsal segments: 5–9–6–7. Distitarsi of both first and second tarsi with three segments.

Palpus: trochanter, 0.3 mm. long; femur, 1.1; patella, 0.7; tibia, 1.2; and tarsus, 0.5. Total length, 3.8 mm. Palpus characteristically flattened.

Chelicera smooth, somewhat enlarged.

Dorsum mottled darker and lighter brown with a white pattern as follows: tubercles over the eye and on the dorsal portion of the

abdomen white, an irregular broad line leads from the cephalothorax to the fourth area midway between the median line and the lateral margin, an irregular white marking extends from this line to the margin in the region of the fourth coxa. Some of the tubercles of the anal operculum white. There is much variation in the details of this pattern. Venter and appendages mottled lighter and darker brown. Legs somewhat lighter.

FEMALE: Total length of body, 4.2 mm. Cephalothorax, 1.4 mm. Width of body at widest portion, 3.2 mm.

Female similar to the male in appearance, but the fourth femur is neither flattened nor enlarged, the chelicerae are normal, and there are no spines on the fourth trochanter.

RECORDS: Tabasco: Teapa, July 17, 1947 (two males, one female); Emiliana Zapata, August 15, 1945; and Villa Hermosa, July 30, 1948 (two immature). Chiapas: Finca Tecoja, July 12, 1950 (one female); Ocosingo, June 24, 1950 (three males, six females) Baños de Azufre, August 1, 1948 (one male, eight females); Finca El Real, June 31, 1950 (three males, 10 females); and Finca San Antonio, June 29, 1950 (one male, two females). All collections by C. and M. Goodnight.

VARIATIONS: A study of the new material collected revealed the extreme variability of this widespread species. This variability is evidenced by the amount of white present on the dorsum and in the number of tarsal segments. In a single collection from Ocosingo, the tarsal count varied widely. A few examples are as follows: 5–8–6–7, 5–10–7–7, 5–7–6–6, and 5–9–6–6. The only consistent feature was the presence of five in the first tarsus.

Vonones gracilipes (Cambridge)

Figure 56

Metacynorta gracilipes CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 554, pl. 52, fig. 8. ROEWER, 1912, Arch. Naturgesch., vol. 78, sect. A, no. 10, p. 24; 1923, Die Weberknechte der Erde, p. 305, fig. 331.

Libitiodes petrunkevitchi GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1163, pp. 9–10, fig. 1. (New synonymy.)

MALE: Total length of body, 4.2 mm. Cephalothorax, 1.3 mm. Width of body at widest portion, 3.4 mm.

	I	II	III	IV
Trochanter	0.4 mm.	0.5 mm.	0.5 mm.	0.5 mm.
Femur	2.3	5.2	3.5	5.4
Patella	0.7	1.0	1.0	1.1
Tibia	1.6	4.1	2.1	3.7
Metatarsus	2.4	5.1	6.7	5.9
Tarsus	1.4	3.1	2.2	1.7
Total	8.8 mm.	19.0 mm.	12.9 mm.	18.3 mm.

Dorsum finely granulate, a pair of very low tubercles on the first area; a pair of somewhat larger ones on the third area; fifth area, each free tergite, and each free sternite with a transverse row of small tubercles. Anal operculum with scattered small tuberculations. Venter and coxae with scattered hairs, a few small granulations also present. The lateral surface of the fourth coxa with a few small tubercles.

Third and fourth trochanters each with a retrolateral tubercle at the apical margin. Femora, patellae, and tibiae of all legs with small tuberculations. Fourth femur long and straight, without special spines. Tarsal segments: 5–10–7–7. Distitarsi of both first and second tarsi with three segments.

Palpus: trochanter, 0.3 mm. long; femur, 1; patella, 0.7; tibia, 1; and tarsus, 0.5. Total length, 3.5 mm. Palpus characteristically flattened. Femur with a ventral row of small teeth.

Chelicera not enlarged, with a few small granulations on the dorsal part of the proximal segment.

Body reddish brown, legs somewhat lighter, but with darker mottlings. Chelicerae and palpi slightly lighter than the dorsum. Dorsum with a white color pattern as in figure 56. The lateral markings in the vicinity of the second and third areas are lacking in one specimen.

FEMALE: Total length of body, 5.8 mm. Cephalothorax, 1.4 mm. Width of body at widest portion, 4.5 mm.

Similar in appearance to the male.

RECORDS: Finca Guatimoc, August 12, 1950 (two males, one female), between 4000 and 5000 feet; Puerto Madero, August 2, 1950 (two females). Collected by C. and M. Goodnight.

VARIATIONS: In some specimens the tubercles of the third area were enlarged into low spines. A few specimens also had white spots near the midline.

Vonones incrassatus (Cambridge)

Figures 57, 58

Paravonones incrassatus CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 554, pl. 52, figs. 5, 5a.

Heterovonones incrassatus ROEWER, 1912, Arch. Naturgesch. vol. 78, sect. A, no. 10, p. 22; 1923, Die Weberknechte der Erde, p. 302.

Paravonones schneirlai GOODNIGHT AND GOODNIGHT, 1946, Amer. Mus. Novitates, no. 1310, p. 5, fig. 17. (New synonymy.)

MALE: Total length of body, 3.9 mm. Cephalothorax, 1.3 mm. Width of body at widest portion, 2.9 mm.

	I	II	III	IV
Trochanter	0.4 mm.	0.4 mm.	0.4 mm.	0.4 mm.
Femur	1.5	2.4	2.0	2.5
Patella	0.7	0.9	0.7	0.9
Tibia	1.1	1.9	1.3	1.8
Metatarsus	1.6	2.5	1.9	2.8
Tarsus	1.4	2.5	1.3	1.7
Total	6.7 mm.	10.6 mm.	7.6 mm.	10.1 mm.

Dorsum finely granulate, with a pair of sharp spines on the third area of the abdominal scute. These spines are short and are directed posteriorly. In some specimens (especially females) these spines are reduced to low tubercles. Remainder of dorsal scute without spines. Each free tergite with a transverse row of very small tubercles. Venter and coxae smooth, with scattered hairs.

Fourth trochanter with a small retrolateral tubercle at the apical margin. Fourth femur tuberculate, somewhat curved, with a row of larger tubercles on the retrolateral margin. Fourth tibia with scattered hair-tipped tubercles. Tarsal segments: 5–8–6–6. Distitarsi of both first and second tarsi with three segments. Tarsal segments subject to variation as indicated below. Basitarsus of first tarsus of male somewhat enlarged.

Palpus: trochanter, 0.2 mm. long; femur, 0.8; patella, 0.7; tibia, 0.9; and tarsus, 0.5. Total length, 3.1 mm. Palpus characteristically flattened.

Chelicera smooth, not enlarged.

Dorsum mottled dark and lighter reddish brown. No white markings present, but the boundaries of the areas are marked by lighter reddish brown. Venter and appendages mottled, legs somewhat lighter.

FEMALE: Total length of body, 3.8 mm. Cephalothorax, 2.8 mm. Width of body at widest portion, 1.2 mm.

Similar in appearance to the male, but the tubercles of the fourth femur are less prominent. It lacks the enlargement of the basitarsus of the first tarsus, and the spines of the third area are much reduced.

TYPE LOCALITY: Male holotype and female paratype from Teapa, Tabasco (Cambridge's record).

RECORDS: Tabasco, Teapa, July 17, 1947 (one male). Chiapas: Baños de Azufre, August 1, 1948 (two males, four females); Ruins of Palenque, July, 1948 (three males, five females); Pichucalco, July 17, 1947 (two females); Ocosingo, June 24, 1950 (two males, two females); Finca Monte Libano, July 5, 1950 (four males, four females); Finca El Real, July 1, 3, 1950 (five males, eight females); near Finca San Antonio, July 9, 1950 (two females); Rio San Gregorio, July 18, 1950 (three males, six females); Finca Guatimoc, August 3, 5, 6, 7, and 12, 1950 (numerous specimens); Rancho La Esperanza near Escuintla, January 20, 1945, collected by T. C. Schneirla. All collections but the last by C. and M. Goodnight.

DISCUSSION: In his original description, Cambridge mentioned that the paired spines were present on both the third and fourth areas of the dorsum. In the large series of collections, this character is shown to be exceedingly variable. One specimen from Finca Guatimoc had paired spines on both the third and fourth areas. Most other specimens had spines only on the third. On some individuals, even these spines were reduced to small tubercles. On a few specimens, especially the females, spines were lacking on even the third area. This is not a population difference, but rather only an individual variation as all types may be found in a single large series. On the whole, the specimens from the Rio San Gregorio had lower armature and often lacked the spines or tubercles of the third area entirely.

Most specimens lacked the white markings also mentioned by Cambridge; however, the areas were always outlined with lighter brown pencillings. In a few specimens, white flecks showed in these divisions and in the division between the cephalothorax and abdomen. The specimens from the Rio San Gregorio were on the whole lighter in color.

There is some variation also in the fourth femur. The specimens from Finca Guatimoc had slightly longer femora (one was 3.4 mm.

long) and somewhat less curvature than the specimens from northern areas. The material from San Gregorio had a much smoother fourth femur, entirely lacking the rows of tubercles. The fourth tibia, however, had a slightly swollen distal end in this population.

Variation also existed in the number of tarsal segments in the various individuals. In the long series from San Gregorio, three males had the following number: 5–9–6–7; 5–10–6–6, and 5–10–6–7. The last specimen had six segments on one side in the first tarsus and five on the other. Females from the same locality had one of the following combinations: 5–10–6–6, 5–9–6–6, or 5–9–6–7. Again this emphasizes the necessity of having long series of animals for correct identification.

Vonones spinofemoralis, new species

Figures 59, 60

MALE HOLOTYPE: Total length of body, 3.3 mm. Cephalothorax, 1.2 mm. Width of body at midwest portion, 2.8 mm.

	I	II	III	IV
Trochanter	0.2 mm.	0.3 mm.	0.4 mm.	0.4 mm.
Femur	1.6	3.2	2.3	3.1
Patella	0.5	0.7	0.7	0.8
Tibia	1.1	2.5	1.3	2.0
Metatarsus	1.6	3.1	2.2	3.4
Tarsus	1.2	2.2	1.1	1.4
Total	6.2 mm.	12.0 mm.	8.0 mm.	11.1 mm.

Dorsum finely granulate, a pair of very low tubercles on the first area and a pair of slightly larger tubercles on the third. Free tergites with only a few small granules. Anal operculum with a few small granulations, each free sternite with a transverse row of a few granulations. Coxae and venter with scattered hairs and granulations. First coxa with a longitudinal row of small tubercles on the ventral surface; third coxa with a posterior row of teeth. Fourth coxa with a dorsal apical spine.

Legs clothed throughout with hairs, all long and slender. Femora, patellae, and tibiae of all legs with small tubercles which are arranged more or less in rows. These are larger on the third and fourth legs. Fourth trochanter with a retrolateral spine at the distal portion; fourth femur with a row of eight to 10 spines at the apical portion. These spines are on the prolateral margin. Tarsal segments: 5–10–6–6. Distitarsi of both first and second

tarsi with three segments. Basitarsus of first tarsus somewhat enlarged.

Palpus: trochanter, 0.2 mm. long; femur, 0.7; patella, 0.4; tibia, 0.7; and tarsus, 0.4. Total length, 2.4 mm. Palpus characteristically flattened. A ventral row of teeth on the femur.

Chelicera not enlarged, smooth except for a few tubercles on the dorsal portion of the proximal segment.

Body and appendages dark reddish brown, with a white color pattern as in figure 59, but somewhat modified as to details in different individuals. All have a conspicuous white V and a median white line which extends posterior to the tubercles of the third area where it joins the transverse white line. Various degrees of this white pattern separate the first and second areas.

FEMALE: Total length of body, 3.4 mm. Cephalothorax, 1.2 mm. Width of body at widest portion, 2.8 mm.

Similar in appearance to the male, but lacking the spines of the fourth femur and the enlargement of the basitarsus of the first tarsus.

TYPE LOCALITY: Male holotype and male and female paratypes from Finca Santa Martha, August 1, 1950 (four males, seven females, two immature). Additional material from Finca Santa Martha, July 31, 1950 (two males, three females), and from Puerto Madero, August 2, 1950 (one male). All collected by C. and M. Goodnight.

RELATIONSHIPS: This new species is related to *V. gracilipes* (Cambridge), but differs in being of smaller size. Also the males have small spines on the distal end of the fourth femur.

SUBORDER PALPATORES THORELL

PHALANGIIDAE SIMON

The members of the Suborder Palpatores are extremely variable in both size and appearance. In size, they vary from minute animals less than 1 mm. in length to some attaining 8 to 10 mm. The length of the legs likewise is variable. Some forms have comparatively short legs; others have enormously elongated ones. The species of this group are extremely widespread in their distribution, some occurring even in the arctic regions.

The characters for differentiating many of the species are highly variable and difficult to interpret. It appears to us that with our present state of information, it is best to retain the now

accepted classification for this large group. Future studies and collections may necessitate modification.

We have not attempted to describe all the forms of this family found in Chiapas, because in many cases the original descriptions are adequate, but they are all listed here.

TRIBE **EUPNOI** HANSEN AND SØRENSEN

GAGRELLINAE THORELL

Geaya esperanza Goodnight and Goodnight

Geaya esperanza GOODNIGHT AND GOODNIGHT, 1942, Amer. Mus. Novitates, no. 1211, p. 14, fig. 27.

TYPE LOCALITY: La Esperanza, September 18, 1939. Collected by C. Bolívar and D. Pelaez.

Geaya fulvum (Cambridge)

Leiobunum fulvum CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 583.

Prionostemma fulvum ROEWER, 1910, Abhandl. Ver. Hamburg, vol. 19, no. 4, p. 184, pl. 2, fig. 26, pl. 3, fig. 5; 1923, Die Weberknechte der Erde, p. 1083, fig. 1199.

MALE: Total length of body, 3.9 mm. Cephalothorax, 1.5 mm. Width of body at widest portion, 2.4 mm. Length of femora: I, 10.1 mm.; II, 25.3 mm.; III, 11 mm.; IV, 14.4 mm.

Dorsum with a reticulate appearance owing to the presence of many low granulations. Eye tubercle not canaliculate, smooth above; venter and coxae and genital operculum with many small tuberculations. Each coxa with an anterior row of three-pronged teeth and a posterior row on coxae I, II, and IV.

Trochanters of legs with scattered tubercles. The femora with small spines which are arranged more or less in rows. Nodules: 0–3–0–0.

Palpus: trochanter, 0.3 mm. long; femur, 1.2; patella, 0.5; tibia, 0.7; and tarsus, 1.2. Total length, 3.9 mm. Palpus clothed throughout with hairs, small spines present on the ventral surface of the femur and on the dorsal surface of the patella. Patella with a small median apical apophysis.

Chelicera small, clothed throughout with hairs.

Dorsal portion of the cephalothorax dark brownish black, with some lighter mottlings. Eye tubercle dark; towards the base it becomes somewhat lighter. Dorsal portion of abdomen golden

yellow, with a median narrow brown stripe. Darker brown blotches present at the posterior portion of the abdomen. This is actually a continuation of the stripe. Venter and anal operculum dark buff in color. Coxae, trochanters, and bases of femora dark brown, nearly black. Remainder of legs brown, somewhat lighter. Palpus dark brown with the exception of the lighter tarsus. Chelicera dark brown.

FEMALE: Total length of body, 4.7 mm. Cephalothorax, 1.3 mm. Width of body at widest portion, 3.1 mm.

Females identical in appearance with the males.

TYPE LOCALITY: Teapa, Tabasco.

RECORDS: Tabasco: Teapa, July 15, 1947. Chiapas: Pichucalco, July 18, 1947; Ocosingo, June 24, 1950; and Toniná, June 28, 1950. All collections by C. and M. Goodnight.

DISCUSSION: This species is placed in the genus *Geaya* inasmuch as material from the type locality which corresponded with Cambridge's description had the nodules 0–3–0–0 rather than 0–3–0–1 as is typical of the members of the genus *Prionostemma*.

Geaya lineata, new species

Figure 63

MALE HOLOTYPE: Total length of body, 3 mm. Cephalothorax, 1.8 mm. Width of body at widest portion, 1.9 mm. Length of femora: I, 13.2 mm.; II, 24.2 mm.; III, 11.1 mm.; IV, 14.1 mm.

Dorsum thickly covered with many small pits which are more prominent on the abdomen than on the cephalothorax. Eye tubercle canaliculate, smooth above except for one or two small spines above each carina. Sternites, genital operculum, and coxae armed with many small black tubercles. A row of teeth present on the anterior margins of all coxae and on the posterior margins of the first and fourth. These teeth are relatively blunt and heavy, ending in three points.

Trochanters and femora of legs with rows of small spines. Nodules: 0–3–0–0.

Palpus: trochanter, 0.4 mm. long; femur, 0.9; patella, 0.5; tibia, 0.6; and tarsus, 1.2. Total length, 3.6 mm. Palpus clothed throughout with hairs, small spines present on the ventral portion of the femur, patella, and tibia. Patella without an apophysis.

Chelicera small, clothed throughout with hairs.

Dorsum golden yellow, shiny, with a dark black stripe starting at and including the eye tubercle and then extending to the

posterior part of the abdomen. Eye tubercle black. Sternites and genital operculum grayish. Coxae, trochanters, and bases of femora black. Remainder of legs brown, darker distally. Femur, patella, and tibia of palpus dark brown, tarsus white. Chelicera brown.

FEMALE: Total length of body, 4.8 mm. Cephalothorax, 1.5 mm. Width of body at widest portion, 3 mm.

Similar in appearance to the male, but with an apophysis on the patella of the palpus.

TYPE LOCALITY: Male holotype and male and female paratypes from the Ruins of Palenque, July, 1949. Collected by C. and M. Goodnight.

RELATIONSHIPS: This new species is related to *Geaya fulvum* (Cambridge), but lacks the dark brown coxae and trochanters which are so conspicuous in that species.

Prionostemma foveolatum (Cambridge)

Leiobunum foveolatum CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 583. BANKS, 1909, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, p. 232.

Prionostemma foveolatum ROEWER, 1910, Abhandl. Ver. Hamburg, vol. 19, no. 4, p. 183, pl. 2, fig. 30, pl. 4, figs. 51–52; 1923, Die Weberknechte der Erde, p. 1082, fig. 1197.

MALE: Total length of body, 2.8 mm. Cephalothorax, 1.2 mm. Width of body at widest portion, 2.3 mm. Length of femora: I, 13.1 mm.; II, 19.3 mm.; III, 11.3 mm.; and IV, 14.6 mm.

Dorsum with many fine reticulations, eye tubercle canaliculate, smooth above. Venter and coxae with scattered small tuberculations. Each coxa with an anterior and posterior row of blunt teeth, each of which bears three small irregular projections.

Legs clothed throughout with hairs. Trochanters with a few scattered tubercles, femora with spines which are more or less arranged in rows. Nodules: 0–3–0–1.

Palpus: trochanter, 0.4 mm. long; femur, 1; patella, 0.5; tibia, 1; and tarsus, 0.5. Total length, 3.4 mm. Palpus clothed throughout with spine-like hairs which are most prominent on the ventral portion of the femur and tibia. Patella with a short median apical swelling, but without an apophysis.

Chelicera small, clothed throughout with hairs.

Dorsum golden, with some darker brown mottling on the anterior portion of the cephalothorax. Lateral margin of the abdo-

men and the posterior lateral margin of the cephalothorax dark brown. Eye tubercle dark brown. These dark areas contrast strongly with the lighter portions of the body. Venter and coxae buff colored, very pale. Trochanters and bases of femora dark brown, strongly contrasting with the coxae. Legs lighter brown, chelicera pale, concolorous with the venter. Palpus having the base of the femur, the trochanter, and the tarsus pale, but most of the femur, tibia, and patella are dark brown and contrast strongly.

FEMALE: Total length of body, 4.4 mm. Cephalothorax, 1.8 mm. Width of body at widest portion, 2.7 mm.

Similar in appearance to male.

TYPE LOCALITY: Holotype from Teapa, Tabasco.

RECORDS: Tabasco: Teapa, July 17, 1947. Chiapas: Pichucalco, July 18, 1947; and the Ruins of Palenque, July 14, 1949. All collections by C. and M. Goodnight.

VARIATIONS: Some of the specimens studied had darker heavy spots on the dorsum.

Prionostemma lubeca Goodnight and Goodnight

Prionostemma lubeca GOODNIGHT AND GOODNIGHT, 1946, Amer. Mus. Novitates, no. 1310, p. 13, fig. 24.

TYPE LOCALITY: Finca Lubeca, Huixtla. Collected by T. C. Schneirla.

Prionostemma victoriae Goodnight and Goodnight

Prionostemma victoriae GOODNIGHT AND GOODNIGHT, 1946, Amer. Mus. Novitates, no. 1310, p. 14, fig. 14.

TYPE LOCALITY: Finca la Victoria, Montozintla, January 18, 1945. Collected by T. C. Schneirla.

Romerella bicolor Goodnight and Goodnight

Romerella bicolor GOODNIGHT AND GOODNIGHT, 1944, Amer. Mus. Novitates, no. 1249, p. 12, fig. 19.

TYPE LOCALITY: Catharina, May 10, 1942. Collected by H. Wagner.

Romerella catherina Goodnight and Goodnight

Romerella catherina GOODNIGHT AND GOODNIGHT, 1944, Amer. Mus. Novitates, no. 1249, p. 12, fig. 24.

TYPE LOCALITY: Catharina, May 4, 1942. Collected by H. Wagner.

LEIOBUNINAE BANKS

Leiobunum dromedarium Cambridge

Figure 61

Leiobunum dromedarium CAMBRIDGE, 1904, Biologia Centrali-Americana, Arachnida, vol. 2, p. 583, pl. 54, figs. 19, 20. ROEWER, 1910, Abhandl. Ver. Hamburg, vol. 19, no. 4, p. 234, pl. 3, fig. 25; 1923, Die Weberknechte der Erde, p. 908, fig. 1058.

MALE: Total length of body, 7.4 mm. Cephalothorax, 2.5 mm. Width of body at widest portion, 4.1 mm. Length of femora: I, 8 mm.; II, 13.5 mm.; III, 6.7 mm.; and IV, 12.3 mm.

Cephalothorax with scattered spinules, eye tubercle not canaliculate, covered with small spines. Dorsum covered with small spines which give a very reticulate appearance. Each of the first and second segments of the abdomen bears a conical elevation which is covered with small spines. Sternites with a few small granulations. Genital operculum and coxae also with small tuberculations, each coxa with an anterior and posterior row of teeth. This row is much reduced on the posterior margin of the first to third coxae, and on the anterior margin of the fourth. Penis of male non-alate.

Legs clothed throughout with hairs, femora with small spines which are arranged more or less in rows.

Palpus: trochanter, 0.2 mm. long; femur, 0.9; patella, 0.4; tibia, 0.9; and tarsus, 1. Total length, 3.4 mm. Palpus clothed throughout with hairs, tubercles present on the ventral portion of the femur and the dorsal apical portion of the femur and patella.

Chelicera small, clothed throughout with hairs.

Entire animal reddish brown, legs somewhat darker, with the trochanters concolorus with the coxae and dorsum.

FEMALE: Total length of body, 8.7 mm. Cephalothorax, 2.7 mm. Width of body at widest portion, 4.9 mm.

Similar in appearance to the male.

TYPE LOCALITY: Teapa, Tabasco.

RECORDS: Tabasco: Teapa, July 16, 1947. Chiapas: Ocosingo, June 24, 1950. Both collections by C. and M. Goodnight.

Leiobunum fuscum Roewer

Leiobunum fuscum ROEWER, 1910, Abhandl. Ver. Hamburg, vol. 19, no. 4, p. 236, pl. 5, fig. 17; 1923, Die Weberknechte der Erde, p. 908.

MALE: Total length of body, 3.1 mm. Cephalothorax, 1.1 mm. Width of body at widest portion, 2.1 mm. Length of femora: I, 2.9 mm.; II, 4.9 mm.; III, 3 mm.; IV, 4.5 mm.

Dorsum covered with numerous small tuberculations which give an over-all reticulate appearance to the abdomen. Eye tubercle slightly canaliculate, with a row of spines around each eye. Supracheliceral lamella prominent, with two blunt projections. Venter and coxae covered with small tuberculations. All coxae with an anterior row of teeth, fourth coxa with a posterior row.

Legs clothed throughout with hairs. Trochanters with numerous spines; femora with small dark spines arranged more or less in rows.

Palpus: trochanter, 0.3 mm. long; femur, 0.9; patella, 0.4; tibia, 0.7; and tarsus, 1.2. Total length, 3.4 mm. Palpus clothed throughout with spine-like hairs. Tibia with an apical ventral swelling. Femur only slightly elevated above the anterior margin of the cephalothorax.

Chelicera small, armed with spine-like hairs.

Dorsum, venter, coxae all light yellowish brown. Eye tubercle darker brown; chelicera and palpus light yellow. Trochanters and bases of femora very dark brown, contrasting strongly with the body. Legs somewhat darker than the dorsum.

FEMALE: Total length of body, 5.8 mm. Cephalothorax, 1.5 mm. Width of body at widest portion, 3.7 mm.

Similar in appearance to male.

TYPE LOCALITY: San José de Guatemala, Guatemala.

RECORDS: Unión Juarez, August 11, 1950; Finca Santa Martha, July 31, 1950; Finca Guatimoc, August 3, 1950. All collections by C. and M. Goodnight.

OLIGOLOPHINAE BANKS

Caddo chomulae Goodnight and Goodnight

Caddo chomulae GOODNIGHT AND GOODNIGHT, 1948, Jour. New York Ent. Soc., vol. 56, pp. 201–203, figs. 1, 2.

This distinctive species was again encountered in the environs of San Cristobal Las Casas. It was found by carefully sifting through leaves and debris.

TYPE LOCALITY: San Cristobal Las Casas.

RECORDS: Same locality, July 12, 14, and 15, 1950 (12 specimens). Collected by L. Stannard and C. and M. Goodnight.

PHALANGIINAE SIMON

Metopilio armatus, new species

Figure 62

MALE HOLOTYPE: Total length of body, 4.3 mm. Cephalothorax, 1.1 mm. Width of body at widest portion, 2.3 mm. Length of femora: I, 3.3 mm.; II, 7.2 mm.; III, 3.5 mm.; IV, 6 mm.

Dorsal segments more or less coalesced into a hard case. Eye tubercle low, unarmed; a row of small tubercles on the last segment of the cephalothorax. Each abdominal segment, with a middle pair of large acute spines. Posterior segments with several smaller lateral spines. Entire dorsum covered with small pits. Venter and coxae also covered with small pits, otherwise unarmed. Coxae without anterior or posterior rows of teeth. Penis alate.

Except for a few small spines on the trochanters of the legs, the segments are smooth.

Palpus: trochanter, 0.2 mm. long; femur, 0.5; patella, 0.3; tibia, 0.4; and tarsus, 0.7. Total length, 2.1 mm. The femur with a ventral row of small, spine-like hairs. Patella, tibia, and tarsus each with numerous spine-like hairs. Tarsal claw short, untoothed.

Chelicera small, covered with spine-like hairs.

Dorsum and appendages black, the dorsum shiny. Trochanters of legs somewhat lighter; femora, patellae, and tibiae black; metatarsi and tarsi brown. Venter and coxae brown.

FEMALE: Total length of body, 6.3 mm. Cephalothorax, 2 mm. Width of body at widest portion, 4 mm.

Females similar to males, but lighter in color and larger in size. Some specimens have a central dorsal stripe of pale yellow, and lateral, white-tipped tubercles on the abdominal segments. Inasmuch as there is a gradation from the plain black of the male to the white stripe of some females, this must be regarded as a color variation. The few animals showing this variation were all collected on the same date at the same locality.

TYPE LOCALITY: Male holotype and male and female paratypes from San Cristobal Las Casas, July 12, 14, and 24, 1950 (19 specimens). All collected by L. Stannard and C. and M. Goodnight.

RELATIONSHIPS: This species is related to *Metopilio niger* Goodnight and Goodnight, which comes from Morelos, but differs in the arrangement of the spines on the dorsum.

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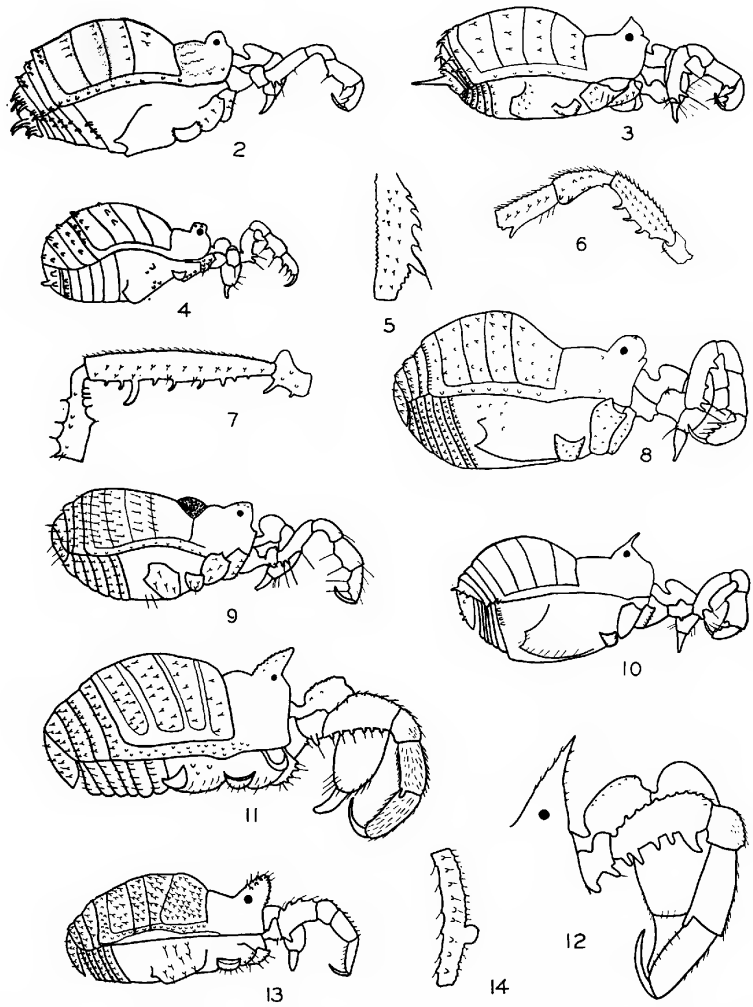


FIGS. 2–8. *Cynortina acanthotibialis*, new species. 2. Lateral view, male, Finca Monte Libano. 3. Lateral view, male, Finca Guatimoc. 4. Lateral view, male holotype, Finca Guatimoc. 5. Prolateral view of tibia of fourth leg, male, Finca Santa Martha. 6. Prolateral view of trochanter, femur, patella, and tibia of fourth leg, male holotype. 7. Prolateral view of trochanter, femur, and patella of fourth leg, male, Finca Guatimoc. 8. Lateral view of male, Finca Santa Martha.

FIG. 9. *Cynortina pilosa*, new species, lateral view, male holotype.

FIG. 10. *Pachylicus acutus* (Goodnight and Goodnight), lateral view, male.

FIGS. 11, 12. *Paramitraceras granulatus* Cambridge. 11. Lateral view, male, Las Casas. 12. Lateral view of eye tubercle, palpus, and chelicera, male, Finca Guatimoc.

FIGS. 13, 14. *Paramitraceras femoralis*, new species. 13. Lateral view, male holotype. 14. Prolateral view of fourth femur, male.

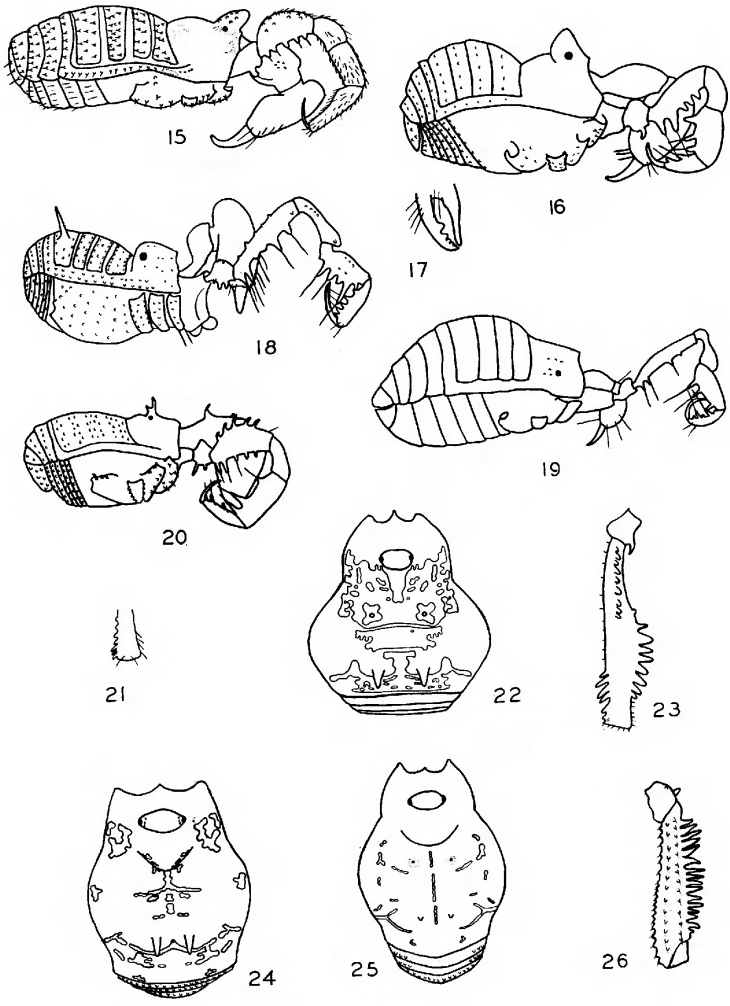


FIG. 15. *Paramitraceras parvulus*, new species, lateral view, male holotype.

FIGS. 16, 17. *Phalangodinus macrochelis*, new species. 16. Lateral view, male holotype. 17. Cheliceral claws, male.

FIG. 18. *Stygnomma bispinata*, new species, lateral view, male holotype.

FIG. 19. *Stygnomma plana*, new species, lateral view, female holotype.

FIG. 20. *Stygnomma spinipalpis*, new species, lateral view, male holotype.

FIGS. 21, 22. *Cynorta aborescens*, new species. 21. Apical portion of tibia of fourth leg, male. 22. Dorsal view, male holotype.

FIGS. 23, 24. *Cynorta apicalis* (Cambridge). 23. Dorsal view of trochanter and femur of fourth leg, male. 24. Dorsal view, male.

FIGS. 25, 26. *Cynorta casa*, new species. 25. Dorsal view, male holotype. 26. Dorsal view of trochanter and femur of fourth leg, male.

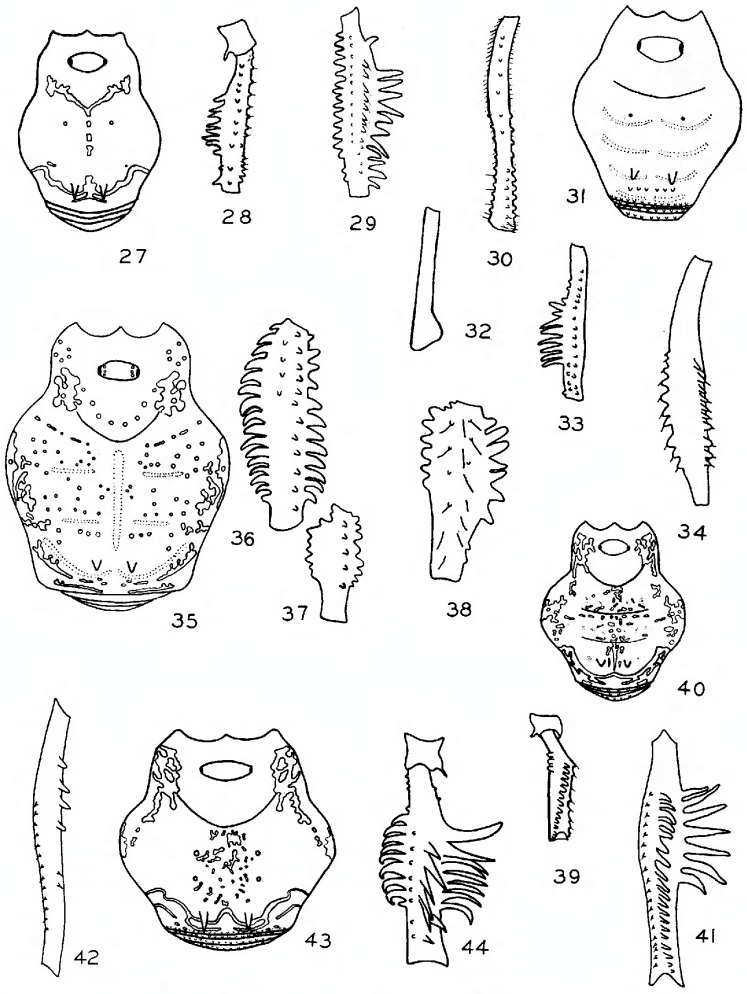


FIG. 27. *Cynorta churubusci*, new species, dorsal view, male holotype.

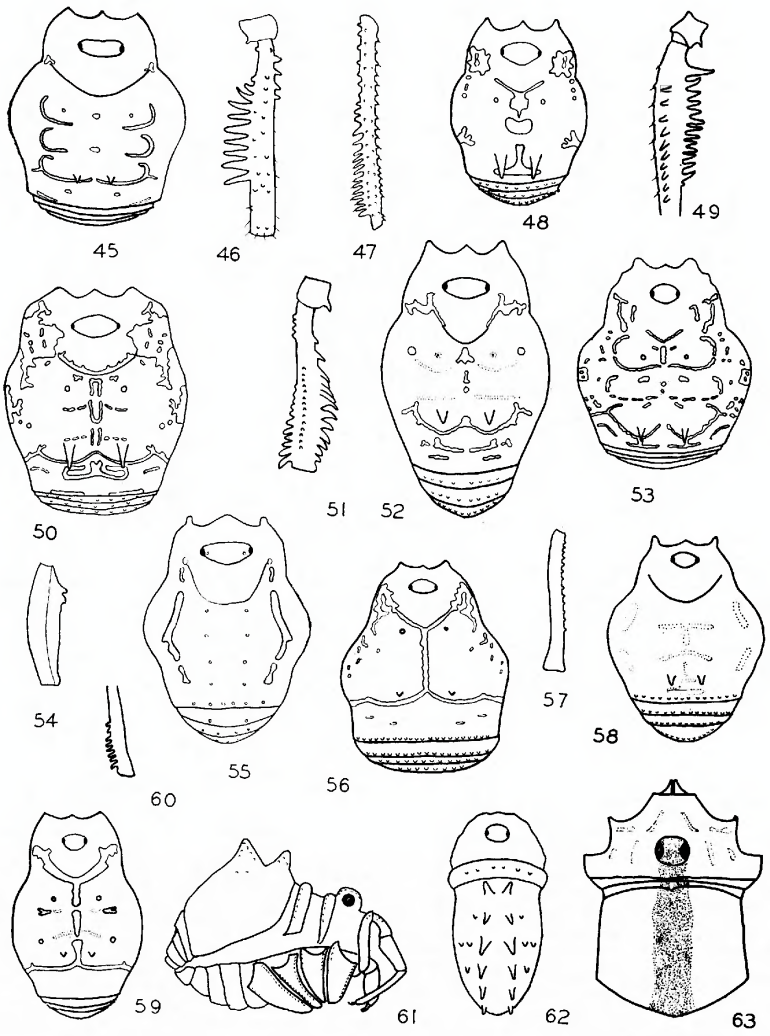
FIGS. 28–33. *Cynorta clavipes* (Cambridge). 28. Prolateral view of trochanter and femur of fourth leg, male, Ocosingo. 29. Prolateral view of femur of fourth leg, male, Palenque. 30. Prolateral view of femur of fourth leg, male, Pichucalco. 31. Dorsal view, male, Pichucalco. 32. Prolateral view of tibia of fourth leg, male, Pichucalco. 33. Prolateral view of femur of fourth leg, male, Pichucalco.

FIGS. 34–38. *Cynorta clavotibialis*. (Cambridge). 34. Dorsal view of femur of fourth leg, male, Yucatan. 35. Dorsal view, male, Jesus Carranza, Veracruz. 36. Dorsal view of tibia of fourth leg, male, Jesus Carranza. 37. Dorsal view of tibia of fourth leg, male, Jesus Carranza. 38. Dorsal view of tibia of fourth leg, male, Jesus Carranza.

FIGS. 39–41. *Cynorta subserialis subserialis* (Cambridge). 39. Ventral view of trochanter and femur of fourth leg, male, Santa Martha. 40. Dorsal view, male, Finca Santa Martha. 41. Ventral view, male, El Virgel.

FIG. 42. *Cynorta subserialis gertschi* (Goodnight and Goodnight), ventral view of femur of fourth leg, male.

FIGS. 43, 44. *Cynorta subserialis tricristatus* (Cambridge). 43. Dorsal view, male. 44. Ventral view of trochanter and femur of fourth leg, male.



FIGS. 45, 46. *Cynorta serratipes* (Cambridge). 45. Dorsal view, male. 46. Prolateral view of trochanter and femur of fourth leg, male.

FIGS. 47, 48. *Paecilaema albonotatum*, new species. 47. Dorsal view of femur of fourth leg, male. 48. Dorsal view, male holotype.

FIGS. 49, 50. *Paecilaema bilineatum*, new species. 49. Dorsal view of trochanter and femur of fourth leg, male holotype. 50. Dorsal view, male holotype.

FIGS. 51, 52. *Paecilaema rastellifer* (Cambridge). 51. Dorsal view of trochanter and femur of fourth leg, male. 52. Dorsal view, male.

FIG. 53. *Vonones circumlineatus*, new species, dorsal view of male holotype.

FIGS. 54, 55. *Vonones compressus* (Cambridge). 54. Dorsal view of femur of fourth leg, male. 55. Dorsal view, male.

FIG. 56. *Vonones gracilipes* (Cambridge), dorsal view, male.

FIGS. 57, 58. *Vonones incrassatus* (Cambridge). 57. Dorsal view of femur of fourth leg, male. 58. Dorsal view, male.

FIGS. 59, 60. *Vonones spinofemoralis*, new species. 59. Dorsal view, male. 60. Dorsal view of distal portion of femur of fourth leg, male.

FIG. 61. *Leiobunum dromedarium* Cambridge, lateral view, male.

FIG. 62. *Metopilio armatus*, new species, dorsal view, male holotype.

FIG. 63. *Geaya lineata*, new species, dorsal view, male holotype.